

Global Networks as a Mode of Balance for Exploratory Innovations in a Late Liberalizing Economy

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Abstract

This article suggests that under weak institutional arrangements, adverse economic conditions, and institutional voids in a late liberalizing economy, local firms that are part of the global value chains of multinational enterprises develop international networks as a *balancing strategy to engage in exploratory innovations*. We argue that local firms do so in order to counter the negative influences of local institutions on exploratory innovations. Using exploratory in-depth qualitative analysis, we study the suppliers of motorcycle parts in

Pakistan that are working with leading Japanese and Chinese motorcycle assemblers. The results suggest that in adverse economic situations local institutional factors can sustain only the development of exploitative innovations. As a *balancing strategy*, motorcycle part suppliers develop international networks with global Tier 1 suppliers, international trade fairs, and international institutions. This strategy helps circumvent the negative influence of home institutional factors on developing exploratory innovations. Our study highlights the importance of *global networks* as a *balancing strategy* for creating exploratory innovations by firms in a late liberalizing economy.

Keywords: exploratory innovations, exploitative innovations, institutions, late liberalizing economy, motorcycle industry, international networks, Pakistan.

Introduction

In this article, we examine the process and mechanisms that facilitate the successful development of exploitative and exploratory innovations in late liberalizing economies (LLEs). This question is important in the context of LLEs because of their extremely weak resource base and highly uncertain institutional conditions. To explore this question, we use the case of the motorcycle component sector of Pakistan, where local suppliers work in non-equity network-based relationships with multinational enterprises (MNEs): Japanese and Chinese assemblers. Our main focus is on understanding how local institutions and MNEs

affect the development of exploitative and exploratory innovations of local firms in LLEs characterized by a weak and underdeveloped institutional infrastructure.

Advances in communication technology and intense competitive pressure has forced firms to continually pursue both exploratory and exploitative innovation in order to stay competitive (Benner & Tushman, 2003; Raisch, *et al.*, 2009; Mueller, *et al.*, 2013). Although both exploratory and exploitative innovations are critical for firm performance, economic conditions in the country and contextual issues can greatly influence the strategies used by firms, including their innovation strategies (Mueller, *et al.*, 2013; Child & Tayeb, 1982; Kumaraswamy, *et al.*, 2012; Awate, *et al.*, 2012). Child (1981) argued that some aspects of organizational behavior are greatly affected by the cultural and political system of a country. But most of the research on innovation activities typically generates “context-free” theories and empirical evidence (Coad & Rao, 2008; Abernathy & Clark, 1985; Cohen & Levinthal, 1990; Chesbrough, 2006). It has been argued that “context-specific” or “indigenous” theories are pertinent to explaining organizational phenomena, and their examination requires closely integrating the unique country or societal setting (Alon, *et al.*, 2011; Cheng, 2014; Almeida & Phene, 2004; Wong, *et al.*, 2005; Tsui, 2004; Whetten, 2009; Cheng, 1994). This is especially true in the context of less developed economies (Teagarden & Schotter, 2013). Khan, *et al.* (2016) stressed the importance of the local context of LLEs in framing the institutions that support learning and skill development aimed at innovation. The study of such institutions shows that industrial policy geared toward innovation is weakly implemented in LLEs, and it is difficult for local suppliers to develop exploratory and exploitative learning capabilities.

Our current understanding of the effect of local institutions and MNEs in developing exploratory and exploitative innovations by LLE firms is limited (e.g., Mueller, *et al.*, 2013; Lorenzen & Mudambi, 2013; Raisch, *et al.*, 2009; Khan, *et al.*, 2016; Fainshmidt, *et al.*,

2016). Scholars have suggested that global pipelines are becoming important sources of external knowledge for LLEs, because there is asymmetry in the sources of knowledge and support at the local level in such markets, But whether LLE firms use these networks as a balancing strategy to overcome the institutional voids in their home markets in order to develop exploratory or exploitative innovations has not been adequately investigated (Khanna & Palepu, 1997; Lorenzen & Mudambi, 2013; Perez-Aleman, 2011; Maskell, 2014; Ricart, *et al.*, 2004; Ghemawat, 2001).

Recent research suggests that international connections and trade fairs are important sources of assessing knowledge (Maskell, 2014; Li, 2014; Andersson, *et al.*, 2016), but our understanding of whether exploratory and exploitative innovations are successful in different institutional environments (Mueller, *et al.*, 2013) and across non-equity based settings remains vague, and it is not clear whether it is possible at all for firms based in LLEs to pursue both these innovations at the same time. The literature on ambidexterity has limitations in its ability to capture the local conditions and underlying processes in LLEs, and most research have focused on developed markets (Raisch, *et al.*, 2009; Mueller, *et al.*, 2013). Conditions in LLEs are in stark contrast to those in developed markets. Weaker skill development infrastructure, technical advice, and political institutions, among other factors, make it difficult for firms based in these markets to pursue both types of innovation (Hoskisson, *et al.*, 2000; Wright, *et al.*, 2005). Thus, it is pertinent to localize, sensitize, and contextualize our theory building in light of the circumstances that surround the exploratory and exploitative innovations undertaken by firms in LLEs (Rousseau & Fried, 2001; Shapiro, *et al.*, 2007). The weak and underdeveloped institutional conditions prevalent in LLEs such as Pakistan can put pressure on local firms to explore outside sources of knowledge and networks in order to balance exploratory with exploitative innovations. These institutional variations pose significant challenges for firms operating in LLEs in developing both types

of innovation and becoming ambidextrous in order to compete effectively in highly integrated global markets. Existing research on exploratory and exploitative innovations overlooked these variations (e.g., Raisch, *et al.*, 2009; Mueller, *et al.*, 2013), despite the fact that they are central to understanding the underlying mechanisms and processes of developing both types of innovation by LLE firms.

Political instability and budgetary constraints in Pakistan make formal institutions highly ineffective in formulating operative industrial policies and in providing technical advice and access to funding for innovation-related activities. Firms in Pakistan find it difficult to operate and pursue both exploratory and exploitative innovations because of adverse and unstable conditions, such as ambiguous industrial policies and lack of funding and technical advice in matters of innovation (Khan, *et al.*, 2016). Lavie, Stettner, and Tushman (2010) suggested that more research is needed to understand contextual differences and the factors behind the development of exploratory and exploitative innovations. This line of research has neglected the role of international networking as a balancing strategy by firms based in LLEs for developing exploratory innovation. The present paper seeks to fill this gap.

We find that local suppliers in the motorcycle component sector of Pakistan use international networks as a *balancing strategy* for developing exploratory innovation, whereas local institutional factors are helpful only for developing exploitative innovation. Our contribution is threefold: (a) we show the important role of international networks in the development of exploratory innovation by LLE firms, and we expand the contingency approach to recognize institutional and industry effects on the innovative activity; (b) we theorize the contextual influences on knowledge networks leveraged by the LLE firms, mindful that LLE institutions support exploitative innovation only, therefore external sources of knowledge, global pipelines, are a vital conduit for the development of exploratory

innovation by the LLE firms; (c) we provide important insights from Pakistan, a country with limited exposure in the international business and strategy field, thereby deepening our contextual understanding of this phenomenon. Our findings contribute to a nuanced understanding of the effect of international networks, as a *balancing strategy* by local firms, on the development of exploratory innovation. Our results suggest that LLE firms could benefit from international networking, and that policy makers should facilitate and encourage local firms to develop a variety of international connections in order to balance both exploratory and exploitative innovations and become ambidextrous.

Literature Review

Exploitative and Exploratory Innovations

According to Benner and Tushman (2002), “exploitative innovations involve improvements in existing components and build on the existing technological trajectory, whereas exploratory innovation involves a shift to a different technological trajectory.” Similarly, He and Wong (2004) defined exploitative innovation as “technological innovation activities aimed at improving existing product-market domains,” and exploratory innovation as “technological innovation aimed at entering new product-market domains.” Exploitation is the process of seeking new ways to improve existing organizational capabilities and using existing knowledge to increase organisational effectiveness (Jones, 2001). Exploitative innovations are incremental ones, developed and designed keeping in mind the needs and requirements of existing customers or markets (Benner & Tushman, 2003: 243; 2015; Danneels, 2002). Scholars have suggested that these types of innovation broaden the scope of existing knowledge and skills, expand existing products and services, improve current designs, and increase the efficiency of existing distribution channels (Abernathy & Clark,

1985; Benner & Tushman, 2003; Raisch, *et al.*, 2009; Kim, *et al.*, 2012; Mueller, *et al.*, 2013).

Exploratory innovations are radical ones, designed to satisfy the needs of emerging markets and customers (Benner & Tushman, 2003; He & Wong, 2004). These innovations offer new designs, create new markets, and develop new channels of distribution; as such they require disrupting existing competences and existing market linkages (He & Wong, 2004; Raisch, *et al.*, 2009), as well as new knowledge or at least a departure from existing knowledge bases (Benner & Tushman, 2003; Raisch, *et al.*, 2009; Kim, *et al.*, 2012). These studies show that learning, improvement, and acquisition of new knowledge are central to both exploitation and exploration. LLE firms lack home-based endowment resources including state-of-the-art knowledge, and may struggle to develop both exploitative and exploratory innovation. The disruption of existing competences and market linkages is more important for the development of exploratory innovation (Benner & Tushman, 2015; Mueller, *et al.*, 2013).

Studies on exploitative and exploratory innovations have not sufficiently examined the underlying processes and mechanisms by which firms develop both exploitative and exploratory innovations (e.g., Mueller *et al.*, 2013). This hiatus is even more glaring in the context of LLEs, which are lagging behind the technological frontier and whose institutions may hinder the shift from exploitative to exploratory innovation. Under these conditions, international networking may become important for LLE firms wishing to acquire knowledge that is not available from home institutions. For example, in the context of exploitative and exploratory innovation of LLE firms, scholars have noted that firms based in emerging economies are initially engaged in output exploitative activities, adjusting their current line of products to meet local market requirements rather than engaging in truly innovative activities

such as developing the next generation of products (e.g., Awate, *et al.*, 2012; Sun & Lee, 2013; Kumaraswamy, *et al.*, 2012). For example, Kumaraswamy, *et al.* (2012) found that in case of the Indian auto component industry, the initial phase was characterized by transitional processes in which local firms built their technology base by licensing technology. Following an absorptive capability-building phase, firms engaged in relationship development and attempted to integrate into the industry value chain. Thus, the local firms first focused on developing capabilities and in the next stage proceeded to consolidation and global integration.

Home country institutions and innovations

The institutional environment in a given market shapes the cooperation between heterogeneous actors operating in a country, as it provides local firms with qualified employees, basic research, advanced technological capabilities, and subsidies (Meyer, *et al.*, 2011; Hoskisson, *et al.*, 2000). (North, 1990) defined institutions as “rule of the game” or humanly devised constraints that structure political, economic, and social interactions thus shaping firms' behavior (Peng & Khoury, 2008; Saka-Helmhout & Geppert, 2011; Child & Marinova, 2014). Recently, scholars have noted that local institutions play an important role in understanding the behavior and economic activity of firms at a country level (Storper, 1997; Scott & Storper, 2007). The economic geography literature has noted that place plays a central role in determining the performance and innovation capabilities of firms. The central idea behind the place thesis is that economic development and innovation capability are highly uneven across places because of spatial variations in their socio-institutional environment (Porter, 1990; Storper, 1997; Yeung, 2005; Rodríguez-Pose, 2013; Rodríguez-Pose & Di Cataldo, 2014).

Recent research in the area of the institution-based view of the firm indicates that institutions play a key role, as actors rationally pursue their interests and make strategic choices within the formal and informal institutional setup (Peng, *et al.*, 2009; Yamakawa, *et al.*, 2008; Dunning, 2006; Peng, 2003). For example, Witt and Lewin (2007) argued that firms in emerging markets often rely on an outward foreign direct investment (FDI) strategy to escape their weak home-based institutions. Variations in national institutional environments enable and constrain the strategic options of firms, including innovation and outward FDI (Zhu, *et al.*, 2012; Khanna & Palepu, 1997; Witt & Lewin, 2007; Peng & Delios, 2006; Fainshmidt, *et al.*, 2016). Previous research has also noted that institutional environment at the country level influences innovation and entrepreneurial activity (Busenitz, *et al.*, 2000; Zhu, *et al.*, 2012). The decision by the firms to allocate resources for innovation is summarily determined by the institutions that moderate the availability and value of internal and external resources available to the firms (Mueller, *et al.*, 2013; Peng, 2003). It has been noted that national governments retain their important role in governing economic activities and regulations (Coe, *et al.*, 2008; Hudson, 2008). This is particularly true in case of LLEs, where state-led institutional systems dominate the business environment and provide capital (Fainshmidt, *et al.*, 2016). Within the global value chain (GVC) literature, scholars have suggested that governments play different roles in different countries in stimulating the upgrading of firms (Hess & Coe, 2006; Gereffi, 2009), but the GVC literature pays closer attention to governance issues within the value chain relationships than to the role of institutional factors (Gereffi, *et al.*, 2005). Similarly, Pavlínek and Ženka (2011) demonstrated the selective nature of upgrading the Czech automotive parts industry within the GVCs, and the limited effect of government industrial policies on functional upgrading.

LLEs are usually governed by limited and nascent political institutions and other regulatory organizations (Martin & Messerlin, 2007), which typically affect business

activities in these countries. In the context of Pakistan, Khan and Nicholson (2015) have argued that macro-level structures are consistently constraining, and different macro-level governance mechanisms and firm-level orientations transform and affect the degree of catch-up observed in such contexts. LLEs also lack institutions that support innovation, such as regulatory organizations, intellectual property regulators, and supply chain management processes that can enable exploratory innovation. At the same time, existing institutions in the LLEs support mostly exploitative innovation (Khan, *et al.*, 2016). For example, on the global innovation index, 2015, Pakistan performs quite poorly on several innovation-related indicators. In certain sectors, like agriculture and food, some LLEs have experienced technological change characterized by capital-led intensification and branding, as well as development of private standards that typically support exploitative rather than exploratory innovation (Reardon, 2015). Thus, the institution-based view is a useful lens for investigating the effect of institutions on the development of exploitative and exploratory innovation in LLEs.

Research Context and Methods

Our research context, the motorcycle industry of Pakistan, is important for several reasons. First, the two-wheeler industry is one of the leading sectors in Pakistan in sales volume. The industry produced around 1.5 million motorcycles during 2013-2014, compared to 100,000 in 2000-2001 (Pakistan Auto Mark Magazine, 2014). The motorcycle industry has served as a catalyst in the growth of engineering sectors of many emerging economies such as China, India, South Korea, and Vietnam.

Second, some of the leading Japanese (Honda, Suzuki, and Yamaha) and Chinese (Qingui and Eagle) brands are operating in the sector, together with several local manufacturers. The motorcycle industry consists of two distinct segments. The mainstream

segment includes assemblers with a global reach, such as the Japanese firms Honda, Yamaha, and Suzuki. The other segment consists of assemblers that manufacture Chinese brand motorcycles. The suppliers of parts are local-owned small- and medium-size firms that rely on production and design technology from the leading assemblers operating in the market. The demands of the changing local and export markets, and global marketing of the products are forcing the domestic motorcycle industry to explore international export opportunities, including working with international suppliers, and expanding into research and development areas in which local part suppliers lack expertise and where local institutional support is weak.

Third, according to various Pakistani media reports, the industry has achieved around 90% localization of parts, making it an ideal setting for examining exploitative and exploratory innovations. Pakistan had followed a localization policy until 2005, and assemblers were required under this policy to source parts from local suppliers. In 2006, the requirement for local sourcing was removed and a tariff-based system (TBS) was established. Local suppliers enjoy tariff protection under the TBS. Under this system, parts that were localized before 2005 carry an import duty of 50%, and non-localized parts a duty of 35%. Localized parts carry a high tariff to protect local suppliers. In this manner, the industry has achieved around 90% local content. The present study, however, was conducted after the “local content” liberalization phase, when the local content requirement was removed. Pakistan has also emerged as one of the top five countries producing and exporting high quality motorcycles, with a 23% annual export growth rate. The main exports markets are Sri Lanka, Bangladesh, Afghanistan, Africa, and the Middle East, making at an ideal setting for examining exploitative and exploratory innovations.

Fourth, over 1,000 local suppliers work directly with the core (multinational) assemblers, making it one of the important manufacturing sectors in Pakistan because of its connections and knowledge transfer potential to local component suppliers. Fifth, the sector is continually introducing new models of motorcycles, including Euro II emission compliance motorcycles. Lastly, location is important because the development of the motorcycle part industry and the resultant component innovation can serve the growing markets of Afghanistan, China, India, and the Middle East.

Data Collection and Analysis

Assemblers and local suppliers work under non-equity arrangements and have established network-type relationships. We used a theoretical purposeful sampling strategy (Eisenhardt & Graebner, 2007). According to Patton (2002: 169), “[t]he logic and power of purposeful sampling lies in selecting *information-rich cases* for study in depth ... [based on] which one can learn a great deal about issues of central importance to the purpose of the inquiry.” This approach helped us identify the key actors relevant for understanding the phenomenon of interest, and develop new insights into it. The methodology is particularly suitable for conducting exploratory studies in understudied areas.

We selected firms that are part of the Pakistani automotive industry and that can help us examine exploratory and exploitative innovation in LLE. The suppliers were identified through the Pakistan automotive manufacturing associations, Pakistan parts manufacturing associations, and through the database of Engineering Development Board of Pakistan, which holds data on various engineering sectors. This approach ensured that the identified firms met the research criteria. As noted by Poulis, *et al.* (2013), contextualization and thoroughness of sampling decisions are of critical importance for ensuring rigor in the study of international phenomena. We achieved the contextualization and thoroughness indicated by Poulis *et al.*

(2013) by selecting the firms that met the research criteria and by interviewing multiple key informants on the suppliers and the assemblers, as well as government officials from the Engineering Development Board, a body responsible for the auto sector in Pakistan. This rigorous process of data collection resulted in a deep and thorough understanding of how motorcycle component suppliers develop exploitative and exploratory innovation. The insights gained through the motorcycle industry of Pakistan shed light on future innovation strategies of firms based in similar economies, going through a similar stage of economic development.

Table 1 shows the components produced by these suppliers. To be selected for this research, suppliers had to: (a) be registered suppliers with the Engineering Development Board of Pakistan and the suppliers' association; (b) supply parts directly to the assemblers rather than for the aftermarket; and (c) solely engaged in the manufacturing of motorbike parts.

Table 1. Types of components and key interviewees

Component suppliers	Type of components	Key interviewees/no of interviews
S1	Shock absorbers/brakes	President/Design Engineer/2
S2	Wire harness, plastic parts	Manager Operations/1
S3	Brake drum/batteries	Supply Chain Manager/Owner/2
S4	Wheel hub/brakes	CEO/1
S5	Starter plug/ignition system	President/Owner/2
S6	Steel framework/ fuel pumps	Technical Director/1
S7	Lights and indicators	Owner/1
S8	Clutch/seats	President/CEO/2

S9	Oil pumps/electronic systems	Owner/1
S10	Suspension parts	Manager/1
S11	Alloy wheels and body parts	CEO/2
S12	Plastic/rubber parts/rear lights	President/2

We conducted qualitative, semi-structured interviews with 12 motorcycle component suppliers, with five of the core motorbike assemblers, and with officials of the Engineering Development Board of Pakistan to understand the important factors for the development of exploitative and exploratory innovations in the sector and for knowledge transfer from assemblers to suppliers. The semi-structured interview approach made it possible to capture the holistic understanding of the respondents' points of view in a most natural manner. It also helped us understand the nuances of this particular context and provided opportunity for respondents to elaborate on key issues concerning exploitative and exploratory innovation in finer detail.

We conducted a total of 27 interviews with senior executives of the selected firms. Each interview lasted approximately 55-70 minutes. We also conducted follow-up interviews over the phone to clarify some of the points made by the interviewees during the initial round of the interviews. We also consulted several other sources, such as local daily newspapers and industry publications, for example, the auto industry magazine of Pakistan, to cross-reference the data and increase its trustworthiness (Sinkovics, *et al.*, 2008). Because the data were collected from multiple sources, such as assemblers, suppliers, officials of the Engineering Development Board, as well as from secondary sources, any potential bias was greatly mitigated (Eisenhardt & Graebner, 2007).

The qualitative exploratory approach was deemed useful for understanding contextual factors such as the role of MNEs, local institutions, and industrial factors that help or hinder

the development of both types of innovation. There are only a few studies in the field of international business using a qualitative approach, and most of the research on this topic is quantitative in nature, which misses the contextual intricacies (e.g., Doz, 2011; Birkinshaw, *et al.*, 2011; Welch, *et al.*, 2011).

The data were analyzed manually, following the recommended procedures of qualitative data analysis (Miles & Huberman, 1994; Eisenhardt & Graebner, 2007; Sinkovics, *et al.*, 2005; Welch, *et al.*, 2011). We transcribed each interview and coded it separately, then compared it with the rest of the interviews to understand the factors affecting exploitative and exploratory innovations at the local component suppliers' end. We started with a set of open-ended questions, and allowed the theory and findings to flow from the data. First, we identified the factors that help or hinder the development of both types of innovation at the suppliers' end. Next, we coded the information into a set of themes, e.g., knowledge transfer from assemblers to suppliers, factors enabling exploitative and exploratory innovation, role of international networks, reasons for engaging in global knowledge networks, balancing strategy to overcome local institutional constraints, linkages with local institutions, and government support for innovation and capability development. Second, we organized and combined certain themes into meaningful categories, for example, factors related to exploitative innovation and the role of global networks and of exploratory innovation. Table 2 shows the themes and some indicative quotes.

Table 2: Key themes and illustrative examples

Key themes	Some illustrative examples across firms
Knowledge transfer from assemblers for product: exploitative innovation and role of initial capabilities	<i>"Knowledge coming from our assemblers has been useful in improving existing products."</i> [S1] <i>"Some level of initial capabilities of the local suppliers is important to internalize knowledge and improve their products and process."</i> [A1]
Links with local institutions and	<i>"The local [motorcycle] industry and other</i>

<p>government support for innovation: support is weak and relevant only for small adjustments to existing products; exploitative innovation</p>	<p><i>manufacturing units suffer because of lack of consultations between the industry and the local educational institutes in developing modern industry specific courses. These are the major barriers to developing state-of-the-art new components.” [S12]</i></p> <p><i>“The knowledge and training of the assemblers and local institutions are helpful only when it comes to bringing improvement in our current products and processes.” [S9]</i></p>
<p>Engaging with global knowledge networks: suppliers attend trade fairs, collaborate with Tier 1 global suppliers and with international organizations to launch new products and improve their capabilities.</p>	<p><i>“To develop new state-of-the-art parts for the new clients and export markets requires key know-how, which is rarely available in our local market, and local institutions can't really help with such knowledge as they lack state-of-the-art knowledge and machinery, therefore, we [the suppliers] engage with international networks to develop new products and capabilities.” [S7]</i></p> <p><i>“International networking with global Tier 1 suppliers and attending international trade fairs are important means for the resource-constrained suppliers to acquire the relevant knowledge, which is often not available in our market, in order to develop new products and improve innovation-related capabilities.” [S4]</i></p>
<p>Balancing strategy to overcome local institutional constraints: local suppliers acquire knowledge from international networks to develop new products and overcome institutional voids.</p>	<p><i>“We have been exploring external [mainly international networks] sources of knowledge to balance the current knowledge that we have from our assemblers in order to develop new components, as we want to export parts and provide parts for the after-sale market. We also attend international automotive trade fairs, and these are very useful sources of knowledge for the development of new components.” [S3]</i></p> <p><i>“The current institutional environment in our country can support only the improvements of existing products for the local market, and we are in the process of developing an international network as a [balancing strategy] to support and extend our existing knowledge base and develop new products.” [S 11]</i></p> <p><i>“Local suppliers have benefited from participating in international trade fairs, and the knowledge gained through such interactions and collaboration with global suppliers is important for the local suppliers to develop new components, as breadth and depth of knowledge are not readily available through local networks.” [Official Engineering Development Board]</i></p>

We also compared the responses of the assemblers with those of the suppliers to understand the common factors and the differences of opinion between the two groups. During the entire process of data analysis, we continually engaged with the data, the emerging themes, and the literature on ambidexterity and on the institution-based view (Eisenhardt & Graebner, 2007). We also reviewed the secondary sources of data, for example, publications related to the motorcycle industry and news clippings from local newspapers for data triangulation purposes (Sinkovics, *et al.*, 2008). To ensure inter-rater reliability, we used two independent and experienced auditors, with backgrounds in anthropology and business management, who audited and cross-checked the coding and the emerging themes; differences were resolved by revisiting the interviews and in some cases revising the themes. We produced a summary report of the findings and shared it with the interviewees to get their feedback, asking them to verify whether findings accurately reflect their point of view. This further enhances the validity, reliability, and rigor of the analysis and of the study findings.

Findings

In this section we explored the key findings emerging from the data. Although knowledge transfer from assemblers to motorcycle suppliers was an important topic, we kept the focus of our analysis on the factors that affect exploitative and exploratory innovation in the motorcycle part sector. We organized the findings into two main sections: (a) factors affecting exploitative innovation, and (b) international networks as a balancing strategy for exploratory innovation. Below we document our findings on the basis of the key factors related to each types of innovation.

Factors affecting exploitative innovation

The findings suggest that local institutions and networking with MNEs (core assemblers) helped the local motorcycle component suppliers develop exploitative innovation. The findings suggest that the suppliers recognize the value of the knowledge they have been receiving from their network assemblers for successfully developing the components. The supplier and assembler managers we interviewed pointed out the importance of the capabilities of the suppliers to receive knowledge and make necessary adjustments in their products and processes, in order to improve the parts they were supplying to the assemblers. One of the supplier managers indicated:

The knowledge that we have received about the design of the components has helped us develop components for the assemblers. Our assembler also arranges training for the suppliers to help them address their product- and process-related problems. These discussions are vital for making improvements to our products.

[S1]

Similar views were also expressed by the assemblers.

We feel that local suppliers must have some existing capabilities in order to benefit from our technology and to bring improvements in the products [parts] that they are supplying to their assemblers. [A 2]

These excerpts suggest that some level of absorptive capacity is required to successfully internalize the knowledge and improve products and processes. These findings support the views of scholars who found that LLE firms initially have a certain level of output capabilities that can be used for exploitative innovations, for local adaptation, and to meet the needs of the domestic market (Awate, *et al.*, 2012; Kumaraswamy, *et al.*, 2012).

The interviews with the assemblers suggest that not all their suppliers possess a strong capability to absorb the transferred knowledge, launch new products, or improve existing ones. One assembler manager indicated:

Some of our suppliers are quite weak in internalizing our technological knowledge and making necessary adaptations in components or launching new ones. [A 5]

The results suggest that the reasons for the low level of absorptive capacity of some of the suppliers were a low level of investment in R&D and in employee training, and weak links with local institutions. Cohen and Levinthal (1990) have argued that the ability of the firm to utilize external knowledge is often a byproduct of R&D investment.

The supplier managers noted that they have weak to non-functioning links with the local universities and training institutions, that their institutional embedded absorptive capacity is weak because of the weak R&D support that local motorcycle suppliers receive, and because of lack of government funding for it. The managers also stressed that there were hardly any subsidies and financial support for developing state-of-the-art exploratory innovation. Both supplier and assembler managers suggested that local institutions do not offer specific courses to the motorcycle industry, and there were limited university-industry interactions taking place in Pakistan that would help develop a curriculum keeping in view the demands of the local industry. The findings indicate that the low level of interaction between the industry and the academia posed a significant hurdle before the development of new components, especially engines and state-of-the-art electronic components. One of the supplier managers noted:

The local [motorcycle] industry and other manufacturing units suffer because of lack of consultations between the industry and the local educational institutions in developing modern industry-specific courses. These are the major barriers to developing state-of-the-art new components. [S12]

Similar views were expressed by other suppliers as well.

The knowledge and training of the assemblers and local institutions are helpful only when it comes to improving our current products and processes. [S9]

The local institutions lack modern machinery, and the training that we can receive from these institutions is helpful only for making small changes to our current products and processes, as the local training providers understand local market conditions, but we can't really rely on this knowledge to develop new products, therefore we have to explore outside sources of knowledge. [S5]

These excerpts indicate that local institutional support in LLEs is relevant for making small adjustments to the existing products, and suppliers do recognize that they need to explore external sources of knowledge to develop these new products. These findings support and expand the theoretical views expressed by scholars such as Witt and Lewin (2007), that emerging market firms invest overseas in order to escape the weak home institutions.

Table 3 below shows the institutional support and links local suppliers have with local institutions in Pakistan.

Table 3. Institutional support and links with local institutions (12 suppliers)

Institutional Links	Yes	No
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Your firm received support for R&D activities from local institutions	17%	83%
Your employees received specific training from government-run skills development centres	58%	42%
Your firm received benefits from academic institutions for research activities	0%	100%
Your firm collaborates with any government R&D institutions	33%	67%
Your firm has any internship programmes with the local universities	17%	83%

The table shows that 58% of suppliers have received specific training from government-run skills development centers and that none of the suppliers have received any benefits from the research activities of local academics. The results attest to the fact that component suppliers receive little support from local institutions in developing their employees' absorptive capacity and in developing exploratory innovation.

The findings also suggest that most of the suppliers' personnel do not hold Master's and engineering degrees. These advanced qualifications are relevant for the sector because of the nature of the components being produced. Table 4 shows the level of education of local suppliers.

Table 4. Educational level of local supplier personnel

Final degree	Yes	No
Have staff with Master's degrees, including engineering degrees	25%	75%
Have staff with Bachelor's degrees	83%	17%
Have staff with technical diplomas	92%	8%

The findings also indicate that from time to time, the Small and Medium Enterprises Development Authority (SMEDA), the Engineering Development Board, and the suppliers' associations organize seminars and a few training days for the suppliers to address productivity- and quality-related issues. The findings further indicate that by working with their core assemblers and local training institutions, such as the supplier associations and SMEDA, local suppliers have improved existing products for the local market or local assemblers. The supplier managers mentioned that local sources of knowledge and the knowledge coming from their core assemblers have been helpful in making necessary improvements to their current portfolio of products and processes. One of the supplier managers remarked:

Our company has upgraded existing products, for instance we substantially improved electronic ignition switch and tail lights with the help of our core assemblers. From time to time we also get some training from local skills enhancement institutions. [S4]

The assemblers also support these views, and the data suggest that the local suppliers have consistently improved their components over the past few years. One of assembler managers said:

The local part suppliers have consistently been improving their parts in recent years, and we do support them in improving the functionality of their parts. Over the last few years, we have noticed that our suppliers have improved the quality of the parts, for example, our braking and suspension suppliers have been improving the parts. [A1]

These findings highlight the important role core assemblers play in helping suppliers improve their products, and also the support local suppliers have been receiving from local institutions in improving their existing products. This suggests that knowledge coming from assemblers to local suppliers, and the links of the latter with the institutions, have been crucial in the suppliers' efforts to improve their products and processes. This lends further support to existing studies indicating that firms in emerging economies can initially develop output capabilities on the basis of the knowledge that they receive from assemblers (e.g., Awate, *et al.*, 2012). Thus, we propose:

Proposition 1: *LLE firms develop exploitative innovation capabilities based on the knowledge coming from MNEs in the context of weak institutional support.*

International networking as a balancing strategy for exploratory innovation

The findings indicate that suppliers have been developing international networks and view these as key sources of knowledge for the development of exploratory innovation, along with the knowledge coming from assemblers. One of the component supplier managers stated:

We have been exploring external [mainly international networks] sources of knowledge to balance with the current knowledge that we have from our assemblers to develop new components, as we want to export parts and provide parts for the after-sale market. We also attend international automotive trade fairs, and these are very useful sources of knowledge for the development of newer components. [S3]

This excerpt highlights the importance of connections not only with assemblers and local institutions but also with international networks, which are pertinent for developing exploratory innovation.

Supplier managers were of the view that to develop new products for the new market or for new customers requires taking risks. The managers pointed out that to develop new state-of-the-art components for new clients and markets also requires key knowhow, which is often not available through local institutional support. The supplier managers indicated that they try to form international networks with global Tier 1 suppliers, and attend international trade fairs and seminars to acquire knowledge in order to develop new products. Supplier managers suggested that the Pakistan-China Motor Industry Council also arranged visits and interactions between local suppliers and the Chinese suppliers for knowledge exchange. This shows that local firms are adjusting their strategies to the changing environment in order to develop new parts. In a similar vein, scholars have noted that in weak environments, local firms have begun to “re-orient themselves by making changes to their strategies, structures, technologies, systems and organizational practices/routines” (Kumaraswamy, *et al.*, 2012: 369).

The data suggest that suppliers seek to develop new components for international markets, and to this end they consider international networks to be crucial for assessing the key knowledge derived from these sources for the development of exploratory innovation. One of the supplier managers stated:

We want to develop new components [such as engines part and electronics] as these are the key components for the motorcycle industry, and for this we need a variety of knowledge. We have been exploring international networks as a solution to overcome the weak local institutional support, and for this purpose we have attended several trade fairs to acquire key knowledge in order to develop new components. [S7]

The findings further indicate that local suppliers have been developing international network relationships as a balancing strategy for developing exploratory innovation. Supplier managers suggested that local institutions and the knowledge coming from their core assemblers have been helpful in developing exploitative innovation, and there is a greater need for local suppliers to explore international connections and network relationships for developing new products. One of the supplier managers said:

Local institutional help is very weak and not really helpful for the development of new products, although we are able to improve existing products. We are developing close connections and collaborative relationships with the international suppliers based in Japan, and help from the Japan International Cooperation Agency (JICA) has been important for the development of new products for export markets. Our association with our assembler [Suzuki] and their [global suppliers] and JICA consultants have been helpful in developing advanced capabilities and parts for international markets. [S2]

Similar views were expressed by other suppliers in a following way:

The current institutional environment in our country can only support the improvements of existing products for the local market, and we are in the process of developing an international network as a [balancing strategy] to support and extend our existing knowledge base and develop new products. [S 11]

The findings indicate that some of the globally oriented suppliers have been developing international network connections as a balancing strategy to overcome the weak institutional support in the home market and to develop exploratory innovation. The data indicate that suppliers have been attending various international trade fairs, for example, the China

International motorcycle trade exhibition, the Tokyo motor trade show, the Japan and Hannover Messe, in Germany, in order to develop exploratory innovation. One of the supplier managers indicated:

We consider ourselves internationally mobile as we are constantly exploring international networking opportunities, whether these are trade fairs or seminars. Our close connections with [Honda], SMEDA, PITAC [local training institutions] and our interactions in Japan with the Japanese suppliers have been useful for our company in expanding its engineering and design. Through these external knowledge sources we have not only improved our current components but have successfully launched new components. [S10]

In some cases, the lead bike assemblers also facilitated international collaborations. For example, Honda has arranged over 20 technical collaborations with Japanese parts manufacturers for its Pakistan-based suppliers. The findings suggest that local suppliers lack capabilities in complete engine- and technology-intensive component segments such as carburetors, pistons, head rings, cylinders, timing and cam chains. As noted above, changing demand in the domestic and export markets and the need for global marketing of bikes are exerting additional pressure on the local motorcycle industry to expand into international markets, including working with key international parts suppliers and developing capabilities in the R&D areas in which the local suppliers lack knowledge and expertise, and where local institutional support is also weak. International networking is important for the local suppliers to upgrade from output to innovative capabilities, especially for export markets. The international markets demand high quality motorcycles, therefore improving the capabilities of the local suppliers is important not only from the suppliers' point of view, but also from that of the assemblers.

The data indicate that most locally sold motorcycles use output capabilities, with minor adjustments and mainly interchangeable parts between different models, and that these brands do not require innovative capabilities in the areas of design, manufacturing, and engineering. By contrast, international markets require innovative and sophisticated motorcycles, in other words, exploratory capabilities. The managers also stressed the fact that demand has shifted from low to high power engines, from 70 cc (for example, Honda Japan has declared Pakistan as the hub of 70 cc technology in the region) to higher power engine capacity, such as 125-150 cc. The managers indicated that local and particularly export demand was shifting away from standard two-wheel motorcycles to more sophisticated and technically advanced low emission, low vibration, low noise, and low heat models, requiring much higher quality standards. These motorcycles required by the export markets were forcing assemblers to upgrade the capabilities of their suppliers from output to innovative exploratory capabilities (Awate, *et al.*, 2012).

These findings support the views of scholars indicating that for LLE firms, developing exploratory capability is essential, especially in a changing institutional environment (Awate, *et al.*, 2012; Kumaraswamy, *et al.*, 2012). For example, Kumaraswamy, *et al.* (2012) showed that during the initial stage, these firms need to acquire technology through licensing and direct purchasing, a process that helps them develop imitative capabilities for local adaptations; in the next stage, to develop exploratory innovation, the firms would have to develop relationships with Tier 1 global suppliers.

Table 5 shows the relative importance of international networks in assessing knowledge for exploratory innovation.

Table 5. Relative importance of international networks for exploratory innovation

Importance of links with international network	Yes	No
International trade fairs for assessing knowledge for exploratory innovation	83%	17%
Collaborations with global Tier 1 suppliers	92%	8%
International associations and institutions such as JICA*	67%	33%

*Japan International Cooperation Agency

The table shows that supplier managers rate global Tier 1 suppliers' collaborations by far the most important international network link for the development of exploratory innovation. This suggests that local suppliers consider international networks to be important sources of knowledge for the development of exploratory innovation. Recent research also indicates that radical innovation is closely related to different sources of knowledge (Fitjar & Rodríguez-Pose, 2011; Mueller, *et al.*, 2013; Kumaraswamy, *et al.*, 2012). For local firms in LLEs, trade fairs provide unique opportunities to develop knowledge and personal relationships with distant places (e.g., Maskell, 2014), which they can use for both exploitative and exploratory innovations.

Interviews with the official of the Engineering Development Board also indicated that they encourage local suppliers to explore external sources of knowledge. To this end, they have been exposing local suppliers to international trade fairs, so that local suppliers can access state-of-the-art knowledge and develop new products for new clients and markets through these global networks. The official of the Engineering Development Board stated:

To develop parts for the international markets and assemblers, local suppliers need state-of-the-art knowledge as well to develop new components for global

markets, and for this purpose we have been taking our suppliers on international trade fairs so they can interact with international customers and explore ways of developing new products for exporting. [Official of the Engineering Development Board]

The above excerpt indicates that exposing suppliers to the outside world is on the agenda of the policymakers as well. International trade fairs offer interactive and unstructured learning mechanisms for firms as part of what is called “global buzz” (Maskell, 2014; Maskell, *et al.*, 2006; Bathelt & Schuldt, 2008). Through these events, the local LLE firms can acquire valuable knowledge in an informal and unstructured way. The events also offer opportunities to develop personal relationships, which can become important for innovation (Bathelt & Schuldt, 2010; Bathelt & Turi, 2011).

Overall, our findings suggest that local institutions and MNEs belonging to the motorcycle industry of Pakistan affect only output-exploitative innovation, and that suppliers are developing international networks by interacting with global Tier 1 suppliers, attending international trade fairs, and interacting with the consultants of Japan Industrial Cooperation Agency (JICA) as a balancing strategy to develop exploratory innovation. These findings concur with the literature, emphasizing that to avoid the risk of lock-in, global networks spreading beyond the regional and national boundaries are crucial for becoming exposed to fresh knowledge (Andersson, *et al.*, 2016; Bathelt, *et al.*, 2004; Lorenzen & Mudambi, 2013; Morrison, *et al.*, 2013). The findings highlight the fact that international networks of global Tier 1 suppliers and international trade fairs have been important sources of knowledge for local suppliers in developing exploratory innovation, together with the knowledge from their core assemblers. Based on the above discussion, we propose:

Proposition 2: *Development of international networking is important for LLE firms to upgrade their capabilities from exploitative to exploratory. International networks act as a balance mode strategy to bridge institutional voids in the LLE and help firms move from the initial exploitative stage to the exploratory one.*

Discussion

The aim of this article was to understand how local firms develop both exploitative and exploratory innovations in Pakistan, given the prevailing weak institutional and innovation-related infrastructure in the country. Using the context of the motorcycle industry, the findings suggest that MNEs and local institutions affect output-exploitative innovation, and that local suppliers have been developing international networks as a *balancing strategy* for the development of exploratory innovation (e.g., Awate, *et al.*, 2012; Kumaraswamy, *et al.*, 2012). Occasionally, to some extent international networking, particularly technical collaborations between the local and international suppliers, were facilitated by the lead assemblers in order to improve the capabilities of their part suppliers from output to innovative capabilities (Awate, *et al.*, 2012).

The industrial context indicates that changing domestic and international demands for sophisticated motorcycles and competitive global marketing of motorcycles were some of the important factors forcing the domestic motorcycle industry to expand into international export markets. These new demands required that local firms expand their capabilities in areas of design and R&D in which local suppliers lack knowledge and expertise, and in which local institutional support is weak. Developing international relationships with global suppliers and attending international trade fairs, local suppliers had an opportunity to expand their exploitative to exploratory capabilities. These findings provide further support to the limited body of studies concerning emerging economies that in the initial stage the local firms acquire key technology through licensing in order to develop exploitative capabilities, and

later establish relationships with global firms for developing exploratory innovation (e.g., Kumaraswamy, *et al.*, 2012).

The findings suggest that local suppliers consider the local institutions and MNEs as helpful sources of knowledge for the development of exploitative innovation, whereas international trade fairs, collaborations with global Tier 1 suppliers, and international associations and institutions as important for assessing knowledge for the development of exploratory innovation (Kumaraswamy, *et al.*, 2012). LLEs have been characterized by weak institutions (Peng, 2003; Khanna & Palepu, 1997; Khan, *et al.*, 2016). Our findings indicate that to overcome the weak institutional conditions in the home market in Pakistan, local firms rely on international networks for the sourcing of knowledge required to develop exploratory innovation. The results provide further empirical support and expand the theoretical debate, noting that the outward FDI of firms in emerging economies is motivated by the desire to escape weak home institutions (e.g., Witt & Lewin, 2007). The findings also indicate that global orientation of the managers heightens the awareness of the development of international connections for sourcing external international knowledge and of the resultant exploratory innovation.

The article provides important insights and highlights the effect of international networking as a balancing strategy for the development of exploratory innovation by the LLEs firms working under the GVC arrangements. The GVC literature notes that LLE suppliers have limited opportunities for upgrading because of the glass ceiling of GVC arrangements. But our findings indicate that local suppliers can still develop exploratory and exploitative innovation by working with MNEs and exploring external sources of knowledge (Kumaraswamy, *et al.*, 2012). For this to take place, the orientation of suppliers and their ability to form international networks must be supported by their lead assemblers. This is one

of the keys to the successful development of both exploitative and exploratory innovation in LLEs. The article contributes to the limited work of scholars showing the importance of international personal and organizational relationships for the upgrading of firms in LLEs (e.g., Lorenzen & Mudambi, 2013; Andersson, *et al.*, 2016; Kumaraswamy, *et al.*, 2012; Awate, *et al.*, 2012).

Implications and Contributions

The article makes three important contributions to the international business and strategy literature: (a) we demonstrate the vital role of international networks for the development of exploratory innovation by LLE firms, highlighting that weak institutions do not necessarily compromise firm performance, thus we expand the contingency approach to recognize institutional and industry effects on the innovative activity, (b) we show that LLE institutions affect exploitative innovation only, therefore external sources of knowledge (global pipelines) are a vital conduit for the development of exploratory innovation by LLE firms, and we theorize the contextual influence on knowledge networks leveraged by LLE firms, and (c) we provide important insights from Pakistan, a country with limited exposure in the international business and strategy field, thereby deepening our contextual understanding of this phenomenon (Khan, *et al.*, 2015; Fainshmidt, *et al.*, 2016).

Michailova (2011) noted that whereas international business as a discipline can and should be at the forefront of meaningful contextualization of research, the current situation is far from that. The author maintained further that many scholars are often context-blind or blindfold themselves intentionally against context. Zahra (2007) also found that it is essential to gain better understanding of the nature, dynamics, uniqueness, and limitations of the context in order to increase the rigor of the research findings. Similarly, Garud, *et al.* (2014) noted the importance of contextualization by adopting a narrative perspective that considers entrepreneurial innovation as an ongoing process involving various actors.

Overall, our findings provide additional insight into one of the seldom researched contexts (Khan, *et al.*, 2015; Fainshmidt, *et al.*, 2016) and contribute to the limited studies on exploitative and exploratory innovation in emerging economies (Awate, *et al.*, 2012; Kumaraswamy, *et al.*, 2012). The findings allow a nuanced understanding of the effect of using international networks as a *balancing strategy* by local firms based in LLEs to develop exploratory innovation (Lavie, *et al.*, 2010; Mueller, *et al.*, 2013). The results indicate that LLE firms would benefit from international networking, and policy makers should facilitate and encourage local firms to develop a variety of international connections in order to balance exploratory and exploitative innovation and thus become ambidextrous.

Managerial Implications

Our findings provide important implications for managers of local firms in LLEs. There have been few studies on how local firms operating in a resource-constrained environment balance exploratory and exploitative innovation. First, our findings demonstrate that local firms still benefit from knowledge originating in local institutions and MNEs operating in a particular sector to develop exploitative innovation. Managers must develop and maintain local connections with institutions and MNEs for the sake of exploitative innovation. Second, the knowledge coming from MNEs and local-level links with institutions may not be sufficient for local firms to develop and balance both exploratory and exploitative innovation. Third, managers need an outward orientation and should attend international trade fairs to develop connections with international training institutions and with global Tier 1 suppliers for the sake of exploratory innovation.

Limitations and Future Research Directions

Despite the important insights offered by this study from a relatively less known context, the study has several limitations that provide important directions for future research. First, the study is exploratory in nature, and we studied the effect of local and international institutions and MNEs on exploratory and exploitative innovation only qualitatively, among a small group of suppliers, although we have taken into the account the views of the assemblers as well. Future studies could build on to this work and conduct a large-scale survey to test the effect of MNEs, local institutions, and types of international networks on both types of innovation.

Second, there may be many contingency variables (for example, prior knowledge base of the firm and managers' international experience) that we have not included in the qualitative investigation. Further studies need to take into account these and other contingency variables, such as environmental turbulence and technological dynamism, and investigate their effect on both types of innovation. Furthermore, we focus on one LLE, Pakistan, therefore further research is required to test these results in other LLEs. The colonial past of Pakistan, exposure to the English language, and structured education system, including higher and vocational education, endow it with capabilities that other LLEs might not possess. It will be instructive to examine the boundary conditions of *a priori* knowledge as well as the development capabilities that are pertinent to exploratory innovation in LLEs. Moreover, we studied only motorcycle part suppliers in Pakistan. Future research could investigate other sectors, for example, telecommunications, pharmaceuticals, and oil and gas (sectors with varying degrees of market dynamism and high-low technology requirements), and assess the effect of local and international networks on exploratory and exploitative innovation.

Finally, we focused on a few key institutions from which the firms we investigated receive help and support. Given the nature of the study, we focused on pertinent research and development-enhancing institutions, concerned with developing capabilities and skills within the firms. But there may be other institutions, outside the scope of the present study, that support innovative activities. Future studies can focus on how these institutions, for example, financial organizations, affect innovation-related activities in LLEs.

Conclusions

We investigated the factors that support exploitative and exploratory innovation for LLE firms using the context of the motorcycle industry in Pakistan. The study highlights the important role of international networks as a balancing strategy by local firms in their attempt to develop exploratory innovation. The findings suggest that international connections are important sources of knowledge for innovation, especially for exploratory innovation in LLEs. Thus, the effect of local institutions and MNEs operating within a given sector in an LLE for both exploitative and exploratory innovation might be limited, and local firms rely on international networks such as international trade fairs, foreign factory visits, collaboration with global Tier 1 suppliers, and international institutions to develop exploratory innovation. These global networks are by nature temporary and used for balancing the two types of innovation by LLE-based firms.

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