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Abstract

Purpose – This study focuses on dual embeddedness as an important channel through which foreign subsidiaries access and share valuable and idiosyncratic knowledge within the MNC. We examine dual embeddedness challenges of foreign subsidiaries based in the context of Iran as a transitional market.

Design/methodology/approach – Our final sample includes 144 active foreign subsidiaries in Iran from across a broad range of industries. A structured questionnaire was distributed to firms and structural equation modelling was adopted to analyse the results.

Findings – Our findings reveal how building external embeddedness in an environment with potentially poor access to valuable knowledge, and a risk of knowledge leakage, impacts the subsidiary's ability to subsequently transfer this knowledge within the MNC. We identify the significance of absorptive capacity as a way for the subsidiary to access knowledge from, and share knowledge with, firms in the local market.

Originality/value – Departing from existing work on subsidiary embeddedness in developed markets, we reveal how competence creating subsidiaries manage dual embeddedness and knowledge transfer in transition economies that are low in knowledge stocks. We unpack how subsidiary absorptive capacity enables access to local knowledge in a transition market context and increases reverse knowledge transfer in the MNC. We answer calls for work on the dynamic and complementary relationships that exists between subsidiary dual embeddedness, absorptive capacity, and knowledge sourcing in less open markets. Focusing on Iran as a transition economy, we provide greater contextual nuance to literature on subsidiary dual embeddedness.

Keywords Competence-creating mandate, Foreign subsidiary, Knowledge transfer, Dual embeddedness, Absorptive capacity, Transition economy.

Introduction

One of the richest avenues for developing competitive advantage in multinational corporations (MNC) is by embedding their foreign subsidiaries in local markets with access to idiosyncratic knowledge sets (Cheng and Huang, 2020; Phene and Almeida, 2008). Foreign subsidiaries however operate in a dual-network that may be complex and challenging to navigate (Ho, 2014). Subsidiaries need to be actively engaged in their internal (e.g. headquarters (HQ) and sister subsidiaries) as well as external networks (e.g. local actors) to source and develop new knowledge and capabilities (Figueiredo, 2011). In particular, a subsidiary with a competence creating mandate is responsible for creating new knowledge and generating innovative products and services (Sofka *et al.*, 2014). Developing and applying new knowledge and competencies improves subsidiary performance, increases their power and autonomy, and enhances their overall position in the MNC network and local market (Gammelgaard *et al.*, 2012). A subsidiary's mandate is determined by the HQ but it is open to change over time, and subsidiaries can upgrade their mandates by developing a dual-pronged developmental approach to enhancing their internal embeddedness and augmenting their external embeddedness (Achcaoucaou *et al.*, 2017; De Beule and Van Beveren, 2019; Conroy *et al.*, 2019). Dual embeddedness (internal embeddedness and external embeddedness) is therefore an important channel through which foreign subsidiaries access and share valuable and unique knowledge within the MNC (Ferraris *et al.*, 2020).

Despite the significance of subsidiary dual embeddedness, we have a limited understanding of how foreign subsidiaries manage these dynamics in transition economy contexts that may be particularly difficult to penetrate, source knowledge and build external embeddedness (Isaac *et al.*, 2019). The research to date on subsidiary dual embeddedness in developed contexts is broad and varied, concluding that balancing internal and external embeddedness will enhance subsidiary knowledge, learning and innovation (Achcaoucaou *et al.*, 2017; Colakoglu *et al.*, 2014). Recent work has suggested that a more dynamic and complementary relationship exists between internal and external embeddedness for foreign subsidiaries with competence creating mandates in developing markets, which can impact their knowledge sourcing capacity (Albis *et al.*, 2021). Transition economies are likely less open to foreign subsidiaries than developed markets in terms of who to build connections with and where to access knowledge from (Pu and Soh, 2018). This embeddedness challenge may

impact the ability of subsidiaries to become deeply ingrained in local networks and access relevant or valuable knowledge, a central objective of competence creating subsidiaries (Giroud *et al.*, 2012; Jindra *et al.*, 2009). Hällgren *et al.* (2018) state that doing business in transition economies for foreign firms can be unpredictable, and unusual events occur that disrupt the life of an organization or a community of organizations.

Iran is one example of a transition context that is not like other emerging or advanced market economies. Iran is not only politically and economically isolated, facing import contradictions across all sectors (Aliasghar *et al.*, 2019; Heirati *et al.*, 2016), but it is also constantly struggling with price fluctuations, unbridled inflation, intense political risks, and high production costs (World Bank, 2020a). Banking sanctions and sharp price fluctuations in the Iranian market, and the existence of monopolies and the absence of foreign competitors have made it a risky market for investment. Transferring cutting-edge technology and know-how to the local business network has been one of the main reasons for the rise in foreign direct investment to developing countries such as Iran (Liu *et al.*, 2014). Local firms in Iran in particular welcome foreign firms and the knowledge spillovers they bring to upgrade their technological and managerial knowledge gaps (Aliasghar *et al.*, 2019). However, the lack of a proper local infrastructure may be a significant obstacle for foreign subsidiaries in accessing and sharing knowledge and building external embeddedness with local firms (Beddi and Mayrhofer, 2013). As a result, competence creating subsidiaries in Iran may also face difficulties in transferring any knowledge back to the rest of their network, hindering their capacity to build internal embeddedness. Transition economies are perceived to have less valuable knowledge than developed markets and subsidiaries seeking to build a deeper level of external embeddedness may require an enhanced level of absorptive capacity to access and utilize the limited knowledge that exists in less open contexts (Aliasghar *et al.*, 2019; Schleimer and Pedersen, 2003; Song, 2014). As such, it is important to examine dual embeddedness challenges of foreign subsidiaries based in a transition market such as Iran.

We examine this issue through the distribution of a structured questionnaire to foreign subsidiaries operating across a broad range of industries in Iran. Our study makes two important contributions to existing research. First, departing from the wide range of studies that explore subsidiary embeddedness in developed markets (Achcaoucaou *et al.*, 2017; Colakoglu *et al.*, 2014; Yamin and Andersson, 2011) we reveal how

competence creating subsidiaries manage dual embeddedness dynamics while operating in the dynamic and uncertain context of a transition economy. Specifically, we find that building external embeddedness is challenging in an environment with potentially poor access to valuable knowledge, and a risk of knowledge leakage, which impacts the subsidiary's ability to subsequently transfer this knowledge within the MNC. Second, advancing studies on subsidiary absorptive capacity and embeddedness ([Aliasghar et al., 2019](#); [Minbaeva et al., 2003](#); [Schleimer and Pedersen, 2003](#)), we identify the significance of absorptive capacity as a way for the subsidiary to access knowledge from local firms and share this knowledge with the HQ. Our findings show how subsidiary absorptive capacity in the form of employee ability and willingness enables the subsidiary to enhance its access to local knowledge in a less open market and increase its reverse knowledge transfer efforts internally in the MNC network over time. Focusing on Iran as a transition economy, and a low-knowledge environment, we provide greater contextual nuance to extant literature on how foreign subsidiaries balance dual embeddedness in this overlooked context. In doing so, we answer calls for more work on the dynamic and complementary relationships that exists between subsidiary dual embeddedness and knowledge sourcing in less open markets ([Albis et al., 2021](#); [Figueiredo and Brito, 2011](#); [Gołębiowski and Lewandowska, 2015](#)). Next, we present an overview of studies on subsidiary dual embeddedness before detailing our hypotheses.

Theoretical Background

Multinational subsidiaries have privileged access to both the internal MNE network and their external local environment, which provides valuable sources of firm specific and contextually rich knowledge ([Andersson et al., 2007](#)). It is well accepted that for subsidiaries to access, absorb and utilize these distinct knowledge bundles, they must first become embedded in the internal and external networks that garner a proprietary position over valuable and relevant knowledge ([Achcaoucaou et al., 2017](#)). Subsidiary embeddedness is therefore analyzed in two distinct yet interrelated contexts i.e. internal and external embeddedness ([Wang et al., 2009](#)). External embeddedness refers to relationships between subsidiaries and the business network's local actors, such as customers, universities, government, and other influential actors ([Figueiredo, 2011](#)). Internal

embeddedness refers to the relationships of subsidiaries with HQ, and relationships among other units in different geographical areas (Yamin and Andersson, 2011). Yet, studies argue that for subsidiaries to benefit from both contexts they must be capable of navigating the conflicting demands of dual embeddedness (Achcaoucaou *et al.*, 2017). Recent work suggests that enhancing dual embeddedness may lead to greater subsidiary innovative performance (Ferraris *et al.*, 2020), a higher level of initiative collaboration within the MNC (Raziq *et al.*, 2021) or an augmented learning capacity (Cheng and Huang, 2020). Despite the growing level of interest on this topic, much of the research to date has been carried out in a developed country context, overlooking how subsidiary dual embeddedness unfolds in a complex and challenging environment such as developing or transitioning economies (Albis *et al.*, 2021).

Developing or transitioning economies present a variety of unique conditions for foreign subsidiaries that they may not be familiar with (Figueiredo and Brito, 2011). Dynamic institutional particularities such as lack of local infrastructure or changing or unfavourable government policies are likely to affect that way in which subsidiaries balance internal and external embeddedness (Isaac *et al.*, 2019). For instance, Gołębiowski and Lewandowska (2015) argue that the relatively lower attractiveness of transition economies in Eastern Europe as a potential source of knowledge will discourage subsidiaries from becoming deeply embedded in local networks. Albis *et al.* (2021) recently found that in developing economies, a complementary relationship exists between subsidiary internal and external embeddedness. They suggest that although external embeddedness in isolation increases innovation, internal embeddedness alone has no effect on subsidiary innovation performance. Knowledge available in less developed host countries is often perceived as less valuable than in developed countries and subsidiaries may have to find novel ways to tap into the limited knowledge sources that exist in transition economies (Figueiredo and Brito, 2011; Pu and Soh, 2018). Moreover, subsidiaries with competence creating mandates, those that emphasize external embeddedness, are particularly sensitive to the contextual idiosyncrasies of transition economies, given their high level of engagement with the local context (Albis *et al.*, 2021). Our study seeks to address the above shortcomings by exploring Iran as a transition economy. The next section details our hypotheses.

Hypotheses Development

Competence-creating mandate and dual embeddedness

Research on dual embeddedness suggests that there is a clear and significant relationship between subsidiary internal and external embeddedness, particularly for those subsidiaries that have a higher degree of autonomy and influence in the form of competence creating mandates (Ferraris *et al.*, 2020). For instance, subsidiaries that enter the local market with competence-creating mandates are more prepared to become embedded externally (Nell and Andersson, 2012) although this may also impact how much embeddedness they have internally in the MNC (Andersson *et al.*, 2007). Equally, in developing markets, foreign subsidiaries may increase competitive resources and power in the local market by enhancing internal embeddedness (Isaac *et al.*, 2019). Having a proper level of internal embeddedness enables subsidiaries to integrate their learning system and gain more knowledge from within and across the MNC (Ciabuschi *et al.*, 2011; Dimitratos *et al.*, 2014). Colakoglu *et al.* (2014) assert that local (host country) and global (MNC group) knowledge inflows to the foreign subsidiary can increase knowledge creation capability. However, the challenge for competence creating subsidiaries in developing contexts lies in balancing both internal and external embeddedness where knowledge creation and development within subsidiaries is enhanced through dual embeddedness (Ho, 2014). Dellestrand (2011) states that for companies seeking to create competencies (such as innovation and new product development), having a balanced and appropriate level of internal and external embeddedness helps them to experience a higher level of knowledge creation and development in both contexts. Yet, studies have failed to examine how competence creating subsidiaries build dual embeddedness in a transition context that is undergoing significant change and presents greater risks. Developing economies are characterized by institutional voids, such as a lack of quality local suppliers or customer base which may hinder a subsidiary's capacity to fully operate and embed in that market (Albis *et al.*, 2021). However, we posit that competence creating subsidiaries will have a greater level of autonomy and influence to be able to navigate and overcome these dynamics. Thus:

H1a: A competence-creating mandate is positively related to subsidiary external embeddedness in a transition economy.

H1b: A competence-creating mandate is positively related to subsidiary internal embeddedness in a transition economy.

Dual embeddedness and knowledge transfer

Knowledge transfer has long been a central issue in the international business literature. [Dimitratos et al. \(2014\)](#) state that the transfer of knowledge, either reverse or conventional (from HQ to subsidiary), depends on the type of subsidiary embeddedness. The local business network is one of the most important sources of knowledge for foreign subsidiaries and subsequently the MNC ([Ferraris et al., 2020](#)). External embeddedness is built by interacting with local actors, increasing a foreign firm's understanding of the local business environment, and improving the identification of market opportunities, which increases reverse knowledge transfer ([Raziq et al., 2021](#)), and subsidiary performance ([Figueiredo, 2011](#); [Phene and Almeida, 2008](#)). [Rabbiosi and Santangelo \(2013\)](#) also found that subsidiaries that play the role of innovation-creator (equivalent to the competence-creating mandate), will transfer high levels of valuable knowledge to the HQ. Reversing local knowledge not only improves MNC performance in the host country ([Ciabuschi et al., 2011](#)) but also upgrades the innovation capability and autonomy of the subsidiary ([Liu et al., 2014](#); [Nair et al., 2016](#)).

Yet, the dark side of external embeddedness has been largely overlooked in extant research, particularly how this may unfold in transition contexts. Building over-embeddedness with local actors may weaken HQ control over subsidiaries ([Ho, 2014](#)) and disrupt the process of knowledge transfer from the internal network to the subsidiary ([Chen et al., 2012](#)) or vice versa ([Ferraris et al., 2018](#)). In this circumstance, foreign subsidiaries may try to meet their needs with local resources if the local environment is rich in knowledge stocks ([Wang et al., 2009](#)). However, we have a limited understanding of how foreign subsidiaries manage this process in transition markets with lower levels of valuable contextual knowledge than their more developed counterparts ([Albis et al., 2021](#); [Nair et al., 2018](#)).

Higher external embeddedness may also lead to encouraging knowledge transfer from the subsidiary to local customers and suppliers ([Giroud et al., 2012](#); [Wang et al., 2009](#)). It is likely that foreign subsidiaries may cooperate and transfer their capabilities to local firms for overcoming local knowledge gaps, which is

particularly the case in emerging markets that are difficult to do business in (Isaac *et al.*, 2019). Increased external embeddedness in these uncertain markets presents the risk that local actors can expropriate the knowledge of the subsidiary (Perri and Andersson, 2014). The increasing level of external embeddedness in transition markets creates a situation where valuable knowledge may leak to local firms (Chen *et al.*, 2014). This “spillover or leakage” refers to “informal transfers of technological know-how from foreign companies to domestic firms” (Eapen, 2012, p. 246). In other words, the more knowledge foreign subsidiaries access, the greater the possibility of knowledge leakage to their rivals in transition economies (Perri and Andersson, 2014). If the valuable knowledge of subsidiaries were leaked to local firms during their collaboration (Xu *et al.*, 2018), it may become a threat to subsidiary competitive advantage. Indeed, foreign subsidiaries seek to protect their competitive advantage by avoiding any leakage of their firm-specific knowledge while simultaneously learning from local knowledge networks (Zhang *et al.*, 2018). We suggest that the unquenchable thirst of local companies in transition economies for foreign knowledge builds a reciprocal trade-off in this relationship. Hence:

H2a: External embeddedness is positively related to reverse knowledge transfer in a transition economy.

H2b: External embeddedness is positively related to the local knowledge transfer in a transition economy.

Internal embeddedness acts as a channel through which reverse knowledge transfer from the subsidiary to the HQ is enacted (Ferraris *et al.*, 2020). Faems *et al.* (2018) showed that internal embeddedness, especially close relationships with sister subsidiaries, increases the creation of new knowledge. We can see that internal embeddedness has a strong influence on the degree of subsidiaries’ knowledge transfer (Ferraris *et al.*, 2018), and has a crucial role in transforming local innovations into global innovations, especially in emerging or developing markets (Albis *et al.*, 2021; Isaac *et al.*, 2019). However, over-embeddedness within the MNC may have adverse consequences for the subsidiary. Becoming too close to the HQ may lead to over-involvement or too much intervention from the HQ in subsidiary activities, hindering their ability to build local networks, access idiosyncratic knowledge and limit innovativeness overall (Yamin and Andersson, 2011).

Higher internal embeddedness can reduce the subsidiary's capacity to acquire local knowledge, but a competence creating mandate permits them to enter into a collaborative atmosphere locally. Subsidiary knowledge may be new for local firms, and it can be beneficial for local companies to enjoy HQ specific knowledge without being under its control. This may be particularly the case for subsidiaries in transition economies that rely more on their internal network, if the external context is too difficult to penetrate (Figueiredo and Brito, 2011; Gołębiowski and Lewandowska, 2015). As mandates are developing and changing, subsidiaries may need more discretion with access to new knowledge locally. In this regard, the following hypothesis is suggested:

H3a: Internal embeddedness is positively related to reverse knowledge transfer in a transition economy.

H3b: Internal embeddedness is positively related to the local knowledge transfer in a transition economy.

Absorptive capacity, dual embeddedness, and reverse knowledge transfer

Absorptive capacity refers to “the ability to recognize the value of new information, assimilate, and apply it to a commercial end” (Cohen and Levinthal, 1990, p. 128). These processes cannot be administrated without sufficient ability and motivation on behalf of employees (Minbaeva *et al.*, 2003). Scholars have introduced ability and willingness as two dimensions for absorbing and transferring new knowledge (Schleimer and Pedersen, 2003). But others have also considered willingness as the central ingredient for RKT (Najafi-Tavani *et al.*, 2012). The absorptive capacity of foreign subsidiaries can help increase access to local knowledge (Phene and Almeida, 2008) and is a critical factor in building embeddedness within the local network. In the knowledge transfer process, both sending and receiving parties should have had the adequate ability and willingness (desire) to make this transmission successful (Gupta and Govindarajan, 2000).

Studies detail that subsidiaries embed themselves in the internal network by increasing their absorptive capacity and receive or transfer more knowledge to the HQ as a result (Giroud *et al.*, 2012; Najafi-Tavani *et al.*, 2012). Subsidiaries also require absorptive capacity to take advantage of external embeddedness (Song, 2014), as it helps them better understand environmental knowledge and incorporate it into the MNC network. Equally, studies indicate that HQ is always concerned about subsidiaries that do not reverse local knowledge

to their internal network (Najafi-Tavani *et al.*, 2012). However, in the process of successful reverse knowledge transfer, there must be ability and willingness simultaneously on both sides of the sender and the receiver (Minbaeva *et al.*, 2003). As such, the recipient's lack of absorptive capacity may be the most significant barrier to knowledge transfer (Minbaeva, 2007) and this may become an even more pertinent issue in knowledge scarce contexts such as transitional economies. A greater level of absorptive capacity may therefore be needed on the part of the subsidiary to fully penetrate, access and utilize the limited supply of relevant and valuable knowledge in their local network, as well as sharing this knowledge internally in the MNC. We posit that absorptive capacity is important for building internal and external embeddedness, particularly in a transition economy context. As a result:

H4a: The subsidiary's absorptive capacity positively moderates the relationship between internal embeddedness and reverse knowledge transfer in a transition economy.

H4b: The subsidiary's absorptive capacity positively moderates the relationship between external embeddedness and reverse knowledge transfer in a transition economy.

Figure 1. Conceptual Model

Building on the above insights, [Figure 1](#) shows the relationships between competence-creating mandates, dual embeddedness, local and reverse knowledge transfer, and absorptive capacity in a transition context.

Research Methodology

In this research, foreign subsidiaries with competency creating mandates in Iran are used as the unit of analysis to examine the hypotheses. According to [Gao *et al.* \(2008\)](#), foreign subsidiaries enter the local market in three ways “Contractual Agreements (including license, technology transfer, cooperation agreement, R&D contracts, franchising, etc.), a joint venture with local companies, and wholly-owned subsidiary” (p. 754). We focus on Iran as a transition economy given the lack of research that examines dual embeddedness dynamics in these unique and challenging settings. In 2016, after India, Iran has attracted the largest inflows (3372 million of dollars) of foreign direct investment in the South Asian region ([UNCTAD, 2017](#)). Iran is classified as an upper-income country and in transition to a market economy ([World Bank, 2020b](#)). But Iran's business context depends on foreign knowledge and Iranian companies learn from foreign firms to fill their technological capacity, especially in production lines ([Sadeghi *et al.*, 2019](#)), and process innovation gaps ([Aliasghar *et al.*, 2020](#)). Fluctuations in prices, high political risk, and the occurrence of unusual events have turned Iran into an extreme context ([Hällgren *et al.*, 2018](#)). These turbulences bring about numerous adverse effects to the performance of companies not only in manufacturing ([Aliasghar *et al.*, 2019](#)), but also in the service sector ([Heirati *et al.*, 2016](#)).

We obtained the list of active foreign subsidiaries from the Chamber of Commerce in Tehran and identified 711 foreign subsidiaries operating in Iran. Items of questionnaires were collected from the literature review. Initially, the items were translated into Farsi and then returned to English by an independent and professional translator so that content understanding was not a matter of concern. The questionnaire was pre-tested by international business managers and academic scholars to correct any potentially vague questions. Finally, the questionnaire was filled in by people who had at least one-year experience in the top or middle management positions. The questionnaires were distributed through face-to-face meetings with CEOs or

middle managers in foreign subsidiaries from October 2017 to February 2018. However, 155 foreign subsidiaries with competence creating mandates accepted our invitation to participate in the research. From those, we received 11 invalid hardcopies, thus, 144 questionnaires were used.¹ The effective participation rate is 21% (155/711). Among respondents, 26 companies were foreign majority-owned (above 51% shares) and 118 companies had foreign minority-owned (less than 50% shares). According to [Yang et al. \(2008\)](#), competence-creating subsidiaries exist in all industries, indeed our data includes service (42.4%) and manufacturing (57.6%) sectors in high (30.6%), middle (60.4%), low (6.3%), and other (2.8%) technology intensity industries. Parent company origins were from Europe (47.2%), Asia (38.9%), the Middle East (13.2%), and South America (7%). These companies are located in Iran with an average age of 18.3 years and an average of 506 full-time employees (see [Table 1](#)).

1. In this study, data collection was conducted after the Security Council unanimously adopted resolution 2231 on 20 July 2015. The importance of this date is due to the fact that numerous foreign firms left Iran, when US pulled out of the Joint Comprehensive Plan of Action (JCPOA) since 8 May 2018 until now (to 2021), and currently the number of these companies is less than this number.

Table 1. Descriptive statistics

Description	Number	Percent	Description	Number	Percent
Origin			Position		
Euro (68)	Germany (25)	47.2	CEO	18	12.5
	Italy (15)		Business Manager	82	56.9
	France (8)		Business Manager	82	56.9
	Swiss (5)		Technical Manager	22	15.3
	Russia (3)		General Manager	8	5.6
	Spain (3)		HRM	7	4.9
	Sweden (3)		Financial Manager	5	3.5
	Denmark (1)		Project Manager	2	1.4
	England (2)				
	Finland (1)		Subsidiary age		
	Kazakhstan (1)		15>	75	52.1
	Poland (1)		15<	69	47.9
Asian (56)	China (18)	38.9	Subsidiary size		
	South Korea (15)		49>	69	47.9
	Japan (12)		50-249	50	34.7
	Taiwan (5)		250<	23	16.0
	India (3)		Missing	2	1.4
	Pakistan (1)				
	Thailand (1)				
Middle East (19)	Turkey (15)	13.2	Industry		
	UAE (2)		Service	61	42.4
	Lebanon (1)		Manufacturing	83	57.6
	Oman (1)				
South America (1)	Venezuela (1)	7.0	Technology intensity		
			High	44	30.6
			Middle	87	60.4
			Low	9	6.3
			Other	4	2.8
	144	100.0		144	100.0

Measures

To address the research objectives, the variables for this study were generated from the literature review.

Reverse Knowledge Transfer (RKT). This variable refers to the transfer of types of acquired knowledge by the foreign subsidiary in the local market to the HQ and other sibling subsidiaries. In line with previous research (Ambos *et al.*, 2006; Gupta and Govindarajan, 2000), four items on a 7-point Likert scale ranging from 1= 'not at all', to 7= 'to a very great extent' were assessed. Respondents responded to the transfer of four types of knowledge including marketing and sales, strategy, distribution, and management system and practices to the internal network. Cronbach's alpha for RKT was 0.837.

Local Knowledge Transfer. This is the transfer of acquired knowledge from the foreign subsidiary to local counterparts. Building on research from [Gupta and Govindarajan \(2000\)](#) and [Ambos et al. \(2006\)](#), four items including marketing and sales, strategy, distribution, and management system and practices on a 7-point Likert scale were used, anchored in 1= 'not at all', and 7= 'to a very great extent'. Cronbach's alpha for local knowledge transfer was 0.872.

Competence-creating Mandate. Questions about the subsidiary's activities in terms of knowledge in the market were asked. Competence-creating is responsible for the use of local scholars and skilled workers to generate new products and services ([Sofka et al., 2014](#)). We used [Yang et al. \(2008\)](#) and [Cantwell and Mudambi \(2005\)](#) for measuring the mandate. If the subsidiary improves the efficiency of the parent company's global production network as well as controlling the assets of the parent company in the local market, then the subsidiary mandate will be a competence-creating type. Respondents were asked on a 7-point Likert scale ranging from 1= 'fully disagree', to 7= 'fully agree'. However, we asked respondents for competence-creating and competence-exploiting mandates, as "both indices are not mutually exclusive. Hence, an MNC subsidiary can have competence-creating functions for certain products or markets and competence-exploiting ones for others" ([Sofka et al., 2014](#), p. 1325). Thus, a subsidiary mandate is defined as competence-creating if it is above the average ([Yang et al., 2008](#)). Nevertheless, in this study, because of the importance of knowledge generation, we only analyze the competence-creating subsidiaries.

Internal Embeddedness. Internal embeddedness refers to the mutual adoption of practices/activities and the extent to which such activities are in line with the internal MNC network. Based on [Najafi-Tavani et al. \(2012\)](#), the extent to which a subsidiary follows the HQ's marketing, sales, distribution, management system, practices, and strategies forms internal embeddedness. This variable was asked on a seven-point scale from 1= 'not at all', to 7= 'to a very great extent'. Cronbach's alpha was 0.848.

External Embeddedness. External embeddedness is defined as the extent to which subsidiaries were connected to members of the local business network (customers, suppliers, competitors and universities, and research institutes) in terms of sales and marketing practices, distribution practices, and management systems ([Najafi-](#)

[Tavani et al., 2012](#)). This variable is measured on a seven-point scale from 1= 'not at all', to 7= 'to a very great extent'. Cronbach's alpha for external embeddedness was 0.774.

Absorptive Capacity. We defined this as “employees’ ability and motivation as the key aspects of the firm’s absorptive capacity that in turn facilitates internal knowledge transfer” ([Minbaeva et al., 2003](#), p. 589). The employees’ ability refers to the level of their overall ability, the level of job-related skills, and the educational level of the subsidiary’s employees relative to that of its competitors. Employee motivation is measured by five items including the subsidiary employees’ overall motivation and work relative to those of its competitors, positive contribution in the firm's performance, highly motivated group of employees compared to those of the HQ, and employees’ behaviors in ways that help company performance. Respondents were asked on a 7-point Likert scale ranging from 1= 'fully disagree', to 7= 'fully agree'. Cronbach's alpha was 0.795.

Subsidiary Age. This represents the foreign subsidiaries’ presence in the local market in years ([Song, 2017](#)). In calculating the number of years, attention should be paid to the year of data collection ([Noorderhaven and Harzing, 2009](#)). In this study, the experience of the subsidiary has been calculated logarithmically since its establishment in the local market until February 2018 (year of data collection).

Subsidiary Size. Number of employees in the subsidiary at the year of data collection indicates the size of the subsidiary. This variable was logarithmically measured.

Minority-Owned Subsidiary. In this research, firm ownership types have been considered in stocks. As such, subsidiaries holding 51% or more of the foreign ownership shares are called majority-owned (it should be noted that wholly-owned subsidiaries are also considered into this type), and those foreign-owned companies with less than 50% stake are called minority-owned ([Hauser et al., 2003](#)). Hence, we measure majority-owned with 1, and otherwise 0.

Foreign Employees. Having foreign employees in the host country can contribute to subsidiaries achieving better performance levels ([Nguyen and Hong, 2013](#)). We consider subsidiaries with at least one foreign nationality in their organization (= 1) and otherwise (= 0).

Table 2. Measures of variables

Variable	Items	Loading	Alpha	AVE	CR
Competence Creating Mandate * (Yang <i>et al.</i> , 2008; Cantwell and Mudambi, 2005)	Access to local researchers and skilled employees	-	1.000	1.000	1.000
	Improve efficiency of the parent MNC's global production network	-			
	Control specific strategic assets in the host country	-			
	Access to local markets	-			
	Obtain local natural resources	-			
	Use a local low-cost labor force	-			
Internal Embeddedness (Najafi-Tavani <i>et al.</i> , 2012)	Adaptation in Sales and Marketing Practices	0.840	0.848	0.662	0.853
	Adaptation in Distribution Practices	0.877			
	Adaptation in Management Practices	0.714			
External embeddedness (Najafi-Tavani <i>et al.</i> , 2012)	Adaptation in Sales and Marketing Practices	0.733	0.774	0.560	0.786
	Adaptation in Distribution Practices	0.909			
	Adaptation in Management Practices	0.562			
Reverse knowledge transfer (Gupta and Govindarajan, 2000; Ambos <i>et al.</i> , 2006)	Transfer of Sales and Marketing Know-how	0.795	0.837	0.837	0.565
	Transfer of Strategy Know-how	0.820			
	Transfer of Distribution Know-how	0.683			
	Transfer of Management Systems and Practices Know-how	0.698			
Local knowledge Transfer (Gupta and Govindarajan, 2000; Ambos <i>et al.</i> , 2006)	Transfer of Sales and Marketing Know-how	0.780	0.872	0.873	0.633
	Transfer of Strategy Know-how	0.860			
	Transfer of Distribution Know-how	0.782			
	Transfer of Management Systems and Practices Know-how	0.756			
Absorptive Capacity (Minbaeva <i>et al.</i> , 2003)	The overall ability of employees in comparison to major competitors	0.718	0.795	0.452	0.705
	job-related skills of employees in comparison to major competitors	0.614			
	The educational level of employees in comparison to major competitors	0.544			
	The quality of the subsidiary's employees relative to those of its competitors on motivation	0.786		0.520	0.813
	The quality of the subsidiary's employees relative to those of its competitors on work effort	0.777			
	Whether employees behave in ways that help company performance	0.691			
	Whether employees contribute in a positive way to company performance	**	0.739		
	Whether subsidiary, compared with the parent company, has a highly motivated group of employees	0.739			

CFA: 0.0914; IFI: 0.0916; TLI: 0.897; Chi-square = 282.114; RMSEA: 0.065; Degrees of Freedom = 175; N: 144

*Competence Creating Mandate is a dummy variable.

**Removed because it was less than 0.5

Common method bias

The common method bias is a potential concern in international business research which can be minimized by adopting some basic approaches, especially in the research design stage (Chang *et al.*, 2010). To evaluate the reliability of the sample, we need methods to minimize this bias before and after the data collection (*ex-ante* and *ex-post* approaches). In this way, by re-translating and pre-distributing the questionnaires among scholars, an attempt was made to diminish the ambiguous, complex, and abstract items (Podsakoff *et al.*, 2012). For the *ex-ante* approach, we separate item questionnaires to neutralize proximity effects in each variable. Podsakoff *et al.* (2003) defined one of the potential causes of bias error when presenting the same names to

scales. We divided the questionnaire into different sections, and, by different naming of scale types and anchor labels, the respondent was informed about any differences between items. It should also be noted that our questionnaire has been filled out by senior managers with sufficient experience. In addition, to maintain confidentiality, the respondents of the questionnaires were filled in anonymously (Chang *et al.*, 2010). And for the *ex-post* approach, we used a *post hoc* Harman one-factor analysis for the statistical reliability of this bias. This method is formulated through the loading of all measures in the form of exploratory factor analysis (Sharma *et al.*, 2009). Harman's single factor test was calculated for all variables and no factor was more than the total variance. The test results show that bias does not pose a major problem (30% of 50%).

Analysis and Results

Reliability, validity, and descriptive statistics. By using confirmatory factor analysis (CFA) in Amos 22.0., we are estimating all measurements of models before any calculations. We need to be considered that we min-centered all independent variables to avoid the multi-collinearity problem. The model fit indicators show a good fit with $\chi^2 = 282.114$; $df = 175$; $IFI = 0.916$; $TLI = 0.897$; $CFI = 0.914$; and $RMSEA = 0.065$. As well as, average variances extracted (AVE), and composite reliabilities (CRs) of the constructs are respectively between 0.452-0.873 and 0.565-0.853. Although, the amount of standard factor loading for all constructs is 0.544-0.909. Table 2 indicates our statistics on CFA estimations. Also, Table 3 describes the square root of the AVEs and Means, standard deviations, and Correlations.

Structural equation modelling. We used structural equation modeling (SEM) to test hypotheses in Amos 22.0. Model 1 in Table 4 is the base model and includes competence-creating, internal and external embeddedness, absorptive capacity, and control variables (without any interactions). Model 2 includes the interaction's effect on the base model (internal and external embeddedness $\times$ absorptive capacity). The model fit indicators for model 1 seem to be appropriate with $\chi^2 = 481.719$ ($p < 0.000$); $df = 276$; $IFI = 0.856$; $TLI = 0.807$; $CFI = 0.848$; and $RMSEA = 0.072$. After the interaction effects are considered in model 2 the effect is $\chi^2 = 539.417$ ($p < 0.000$); $df = 315$; $IFI = 0.846$; $TLI = 0.789$; $CFI = 0.836$; and $RMSEA = 0.071$.

Based on Table 4, the impact of competence-creating mandates on external embeddedness (H1a) is not significant ($\beta = -.052$; $t\text{-value} = -0.576$), however, consistent with our hypothesis (H1b), a competence-creating mandate has a positive and significant effect on internal embeddedness ($\beta = 0.393$; $t\text{-value} = 4.597$; $p < 0.000$). H1a is supported. H2a illustrated that external embeddedness has a positive effect on RKT. Our results show the opposite ($\beta = 0.045$; $t\text{-value} = 0.530$), and H2a is not supported. Surprisingly, both internal and external embeddedness have a positive and significant effect on FKT to local firms ($\beta = 0.201$; $t\text{-value} = 2.118$) and ($\beta = 0.277$; $t\text{-value} = 2.736$). H2b and H3b are supported. Also, we find support for H3a hypothesis that postulated positive and significant effects from internal embeddedness to RKT ($\beta = 0.415$; $t\text{-value} = 4.223$). As shown in Table 4, absorptive capacity cannot moderate the relationship between internal embeddedness and RKT ($\beta = 0.020$; $t\text{-value} = 0.261$). Thus, H4a is not supported. On the other hand, absorptive capacity $\times$ external embeddedness have a positive and significant effect on RKT ($\beta = 0.136$; $t\text{-value} = 1.697$). Hence H4b is supported. Among the control variables, age, majority-owned, and having foreign employees, have positive, and negative significant effects on RKT ($\beta = 0.176$; $t\text{-value} = 1.936$; $\beta = 0.275$; $t\text{-value} = 3.320$; $\beta = -0.172$; $t\text{-value} = -2.064$, respectively). Other control variables are not supported (see Table 4).

Table 3. Correlations

Variables	N	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Competence Creating	144	0.5694	.49688	1.000									
2. Internal Embeddedness	144	4.1597	1.94923	.348**	0.813								
3. External Embeddedness	144	5.1620	1.48496	-.056	-.238**	0.748							
4. Absorptive Capacity	144	5.4812	0.80009	-.098	.064	.140	0.736						
5. Reverse Knowl. Transfer	144	4.6875	1.67470	.276**	.443**	-.043	.126	0.751					
6. Local Knowl. Transfer	144	4.8976	1.59364	.076	.219**	.088	.076	.194*	0.795				
7. Subsidiary Age	144	18.3958	15.25917	-.062	.081	-.128	.096	.122	.040	1.000			
8. Subsidiary Size	142	3.9473	1.81870	.122	.020	-.021	-.034	.075	.064	.458**	1.000		
9. Majority-owned	144	0.1806	0.38599	.189*	.349**	-.104	.115	.348**	.189*	-.062	-.016	1.000	
10. Foreign employee	144	1.4092	1.41482	-.133	-.151	.097	.069	-.140	.109	.415**	.594**	-.247	1.000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Note: The **bold** numbers indicate the Square-root of AVE

Table 4. Structural Equations Model (SEM)

Path	Model 1	Model 2
Competence Creating → Internal Embeddedness	.393*** (4.597)	.394*** (4.608)
Competence Creating → External Embeddedness	-.052 (-0.576)	-.052 (-0.577)
Internal Embeddedness → Reverse Knowledge Transfer	.415*** (4.223)	.421*** (4.310)
Internal Embeddedness → Local Knowledge Transfer	.277*** (2.736)	.280*** (2.763)
External Embeddedness → Reverse Knowledge Transfer	.045 (0.530)	.044 (0.521)
External Embeddedness → Local Knowledge Transfer	.201** (2.118)	.202** (2.124)
Absorptive Capacity → Reverse Knowledge Transfer	.088 (1.004)	.111 (1.239)
Absorptive Capacity → Local Knowledge Transfer	.020 (0.220)	.027 (0.292)
Absorptive Capacity × Internal Embeddedness → Reverse Knowledge Transfer		.020 (0.261)
Absorptive Capacity × External Embeddedness → Reverse Knowledge Transfer		.136* (1.697)
AGE_LOG → Reverse Knowledge Transfer	.176** (1.936)	.192** (2.106)
AGE_LOG → Local Knowledge Transfer	-.025 (-0.256)	-.019 (-0.194)
SIZE_LOG → Reverse Knowledge Transfer	.016 (0.185)	.006 (0.064)
SIZE_LOG → Local Knowledge Transfer	.045 (0.473)	.040 (0.424)
Majority Owned → Reverse Knowledge Transfer	.275*** (3.320)	.279*** (3.402)
Majority Owned → Local Knowledge Transfer	.135 (1.549)	.136 (1.554)
Foreign Employee → Reverse Knowledge Transfer	-.172** (-2.064)	-.168** (-2.027)
Foreign Employee → Local Knowledge Transfer	.125 (1.405)	.125 (1.402)
CFI	.848	.836
IFI	.856	.846
TLI	0.807	0.789
RMSEA	.072	.071
DF	276	315
Chi-square	481.719***	539.417***

Discussion and Contributions

In this study, we examine the dual embeddedness challenges of foreign subsidiaries based in a transition market such as Iran. We reveal how competence creating subsidiaries operating in a transition economy will face significant challenges in building internal and external embeddedness, which impacts their reverse knowledge transfer within the MNC and local knowledge transfer externally. In particular, we identify the significance of subsidiary absorptive capacity as a way to actively manage these embeddedness dynamics in uncertain and evolving transition markets for increasing reverse knowledge transfer. Our findings, therefore, provide greater contextual nuance to extant research on subsidiary embeddedness. Below we expand on how our findings advance extant literature.

Our study reveals some interesting insights on how subsidiaries may approach managing dual embeddedness while operating in a transition context. According to our results, competence creating subsidiaries in a transitioning setting, that is generally a low-knowledge environment, will seek to enhance their internal embeddedness to subsequently build external embeddedness. Research shows that internal embeddedness provides access to valuable knowledge from HQ and sister subsidiaries (Yamin and Andersson,

2011). However, we find that subsidiaries may use their internal embeddedness as a platform to share distinctive knowledge with local actors, and therefore build external embeddedness. We suggest that competence-creating subsidiaries in transition economies should not overlook the significance of internal embeddedness, and the valuable knowledge it provides, to enrich their embeddedness in local environments that may be difficult to penetrate (Beddi and Mayrhofer, 2013; Giroud *et al.*, 2012). The logic here is that transition economies are low in knowledge stocks and local firms will be keen to collaborate with, and benefit from, spillovers or leakages from foreign subsidiaries (Faems *et al.*, 2018; Jindra *et al.*, 2009). In this sense, we depart from existing studies on subsidiary embeddedness by drawing attention to the important relationship between internal embeddedness and local knowledge transfer between subsidiaries and local actors in transition markets.

Our study also presents noteworthy findings with regard to competence creating subsidiaries and external embeddedness in Iran. Building on research that explores absorptive capacity in ‘less-open’ contexts (Aliasghar *et al.*, 2019), and connecting this with work on subsidiary embeddedness (Minbaeva *et al.*, 2003; Schleimer and Pedersen, 2003), our findings indicate that subsidiary absorptive capacity plays an important role in piercing local networks and building external embeddedness in a low knowledge context like Iran. In transition economies in general, it may be very difficult for subsidiaries to access and absorb the limited knowledge repositories that exist, or build the relationships with actors that guard these (Jindra *et al.*, 2009). In this sense, our findings suggest that the absorptive capacity of the foreign subsidiaries in terms of willingness and motivation of employees (Nair *et al.*, 2016) is significant in navigating these challenging conditions and engaging in local knowledge transfer. However, our findings also draw attention to how, in the process of building this external embeddedness, subsidiaries may risk leakage or spillover of valuable knowledge to potential competitors (Giroud *et al.*, 2012; Wang *et al.*, 2009). Transition economies such as Iran will likely have underdeveloped institutional infrastructures for protecting against knowledge expropriation, which may deter foreign subsidiaries from becoming more locally embedded. However, it may be the case that competence creating subsidiaries have to forgo the drawbacks of losing valuable knowledge in the short term if it enhances their network position in the local economy over time. In the long run, as Iran becomes a more

market-based economy, the benefits for foreign subsidiaries in availing of more favourable policies may outweigh the negatives of knowledge loss.

Moreover, our findings suggest that enhancing the external embeddedness of competence creating subsidiaries in transition economies can increase the reverse knowledge transfer capacity of the subsidiary. However, this is dependent on the absorptive capacity of the subsidiary in accessing local knowledge that is more difficult to extract in a transition market such as Iran. In particular, having capable and motivated employees makes it possible for subsidiaries to transfer local knowledge to the internal network. Contrary to other studies (Nguyen and Hong, 2013) our findings suggest that the presence of foreign employees (or expatriates) may reduce the amount of reverse knowledge transfer the subsidiary engages in. One reason may be the difference between the level of local knowledge and home country knowledge that these employees possess. These insights build on other work on dual embeddedness (Andersson *et al.*, 2007) and absorptive capacity (Song, 2014) but draw attention to contextual issues that a transition economy like Iran presents (Zhang *et al.*, 2018).

Foreign subsidiaries in an evolving and uncertain market will encounter low-knowledge contexts and other environmental barriers such as political risk and a dwindling economy. We suggest that proximity to the internal network can greatly prevent any potential damage in such markets. Although we did not collect data from the HQ it would be important for future studies to explore how HQs can assist subsidiaries in penetrating local markets that are in transition, increasing RKT as a result. To date, most studies on subsidiaries in transition economies have focused on how HQ transfers knowledge to subsidiaries, overlooking the significance of HQ-subsidiary relationships in enhancing RKT efforts in these rapidly evolving markets. Reverse knowledge transfer is also a way for the subsidiaries in transition markets to upgrade their position within the corporate hierarchy over time (Dimitratos *et al.*, 2014).

Our research also suggests possessing capable and motivated employees may be helpful for acquiring local knowledge via communicating with the local actors and transferring local knowledge into the MNC's network. Building on others (Ho, 2014) the results of our study stress the importance of local environmental conditions in understanding how subsidiaries with competence-creating mandates source, share and transfer

knowledge locally and globally. These insights respond to calls for a greater understanding of the interdependencies between the MNC (with reverse knowledge transfer), competence-creating subsidiaries, and host-country environments (local knowledge transfer) (Liu *et al.*, 2014). We extend this work by examining how absorptive capacity can help the subsidiary navigate dual embeddedness and reverse knowledge transfer in a transition economy.

Theoretical contributions

Our paper makes two primary contributions to existing research. First, our study answers calls for a greater understanding of the complementary relationship between subsidiary dual embeddedness and knowledge sourcing in developing countries (Albis *et al.*, 2021; Figueiredo and Brito, 2011; Gołębiowski and Lewandowska, 2015). We reveal how competence creating subsidiaries manage dual embeddedness dynamics while operating in the particularly challenging context of a transition economy. Specifically, our findings demonstrate how transition economies present unique engagement challenges for foreign subsidiaries, such as knowledge leakage, which may impact their knowledge sourcing capacity and level of external embeddedness. Advancing extant work on subsidiary external embeddedness and knowledge sourcing (Cheng and Huang, 2020; Ferraris *et al.*, 2018, 2020; Isaac *et al.*, 2019), we find that building external embeddedness in an environment with potentially poor access to valuable knowledge, and a risk of knowledge leakage, impacts the subsidiary's ability to subsequently transfer this knowledge within the MNC. Yet, we suggest that over the longer-term subsidiaries can take advantage of the increased willingness of local actors to learn from their internally sourced expertise, allowing them to build a network and become a dominant player in local context. These insights advance current work on dual embeddedness in developed markets (Achcaoucaou *et al.*, 2017; Cheng and Huang, 2020) by suggesting that the unique conditions of a transition economy mean forgoing the advantages of embeddedness in the short term to build deeper external embeddedness and privileged access to locally rich knowledge over the long term.

Second, connecting insights on subsidiary absorptive capacity with work on subsidiary embeddedness (Aliasghar *et al.*, 2019; Minbaeva *et al.*, 2003; Schleimer and Pedersen, 2003), we identify the significance of

absorptive capacity as a way for the subsidiary to access knowledge from local firms and share knowledge with the HQ. Specifically, we find that subsidiary absorptive capacity in the form of employee ability and willingness enables the subsidiary to enhance its access to local knowledge and increases its reverse knowledge transfer efforts within the MNC. Few studies have explored how absorptive capacity impacts subsidiary dual embeddedness in transition economies that may be less open to foreign subsidiary engagement ([Aliasghar et al., 2019](#)). Ultimately, transition economies that are changing toward pro-market reforms present an important opportunity for foreign subsidiaries to increase their dual embeddedness and enhance the global knowledge sourcing capacity of the MNC.

Managerial implications

Our study presents some managerial implications. Managers of foreign subsidiaries in transition economies should pay attention to the level of embeddedness they have in both internal and external networks, and how this is impacted by the idiosyncratic conditions of the local market. Too much internal embeddedness may impact autonomy but too much external embeddedness in a dynamic and uncertain market may hinder the resources and knowledge they receive. In order to expand their discretionary power, foreign subsidiaries should focus on developing their absorptive capacity to build partnerships with local actors that may be untrustworthy or opportunistic in expropriating or withholding valuable knowledge. Absorptive capacity leads to better recognition, assimilation, and application of external knowledge ([Cohen and Levinthal, 1990](#)). In this sense, dual embeddedness in a transition market is an even more delicate and risky balancing act than in developed markets but it that may be achieved through a focus on the absorptive capacity of subsidiary employees. HQ managers should also be aware of the distinctive embeddedness challenges that these subsidiaries face and should seek to balance appropriate support without over-involvement.

Not having the appropriate complementary resources to access knowledge in low-knowledge contexts such as Iran is a major problem for subsidiary managers ([Aliasghar et al., 2019](#)). Iran has been subject to political and economic sanctions which has brought even more difficult conditions for foreign firms operating in Iran. The environmental conditions of Iranian businesses have been challenged by Iran's economic

sanctions, for example, Iranian companies have limited access to cutting-edge technologies even in low-and-middle tech industries (Aliasghar *et al.*, 2020). Iran is suffering from a number of significant difficulties that make it an extremely challenging context for doing business. Some of these issues currently include banking sanctions, high transaction costs, the absence of first-class foreign competitors, sharp price fluctuations, high inflation, and high production costs. In this extreme context, it is important for subsidiary managers to ensure they have a strong level of internal embeddedness in the event that their local connections and knowledge sources are ruptured or severed.

Limitations and future research

Despite the important findings of this study, some of the limitations require further discussion. First, this research focuses on specific types of knowledge, such as strategy, marketing, distribution, and management knowledge. We recognize that subsidiaries may deal with other types of knowledge, such as tacit, technical, manufacturing knowledge, and so on. Further studies could analyze the different knowledge sets that can impact the transfer of local knowledge. Second, this research is limited to investigating one type of competence creating subsidiary in a specific transition context of Iran. Other research can examine the subsidiary mandate of this statistical population from different categories and compare across transition economies. Third, we need to measure the absorptive capacity of local firms in order to fully understand the level of subsidiary local knowledge transfer. More studies can collect data from local and foreign firms to examine how much knowledge leakage stems from local firms' absorptive capacity. Fourth, institutional distance and power dynamics were not a focus in our study, but can play an important role in how a foreign subsidiary balances dual embeddedness in transition economies. Iran is a culturally complex context, particularly for MNCs from developed markets, and a significant power dynamic may exist for US MNCs given the geo-political tensions that exist. This power dynamic may unfold in the HQ-subsidary relationship and others should build on our findings to see how HQ over-involvement impacts a subsidiary's embeddedness in transition contexts.

References

- Achcaoucaou, F., Miravittles, P. and León-Darder, F. (2017), “Do we really know the predictors of competence-creating R&D subsidiaries? Uncovering the mediation of dual network embeddedness”, *Technological Forecasting and Social Change*, Vol. 116 No. 1, pp. 181-195, doi: [10.1016/j.techfore.2016.10.019](https://doi.org/10.1016/j.techfore.2016.10.019).
- Albis, N., Alvarez, I. and Garcia, A. (2021), “The impact of external, internal, and dual relational embeddedness on the innovation performance of foreign subsidiaries: Evidence from a developing country”, *Journal of International Management*, Vol. 27 No. 4, 100854, doi: [10.1016/j.intman.2021.100854](https://doi.org/10.1016/j.intman.2021.100854).
- Aliasghar, O., Rose, E.L. and Chetty, S. (2019), “Building absorptive capacity through firm openness in the context of a less-open country”, *Industrial Marketing Management*, Vol. 83 No. 1, pp. 81-93, doi: [10.1016/j.indmarman.2018.11.007](https://doi.org/10.1016/j.indmarman.2018.11.007).
- Aliasghar, O., Sadeghi, A. and Rose, E.L. (2020), “Process innovation in small and medium-sized enterprises: The critical roles of external knowledge sourcing and absorptive capacity”, *Journal of Small Business Management*, pp. 1-28, doi: [10.1080/00472778.2020.1844491](https://doi.org/10.1080/00472778.2020.1844491).
- Ambos, T.C., Ambos, B. and Schlegelmilch, B.B. (2006), “Learning from foreign subsidiaries: An empirical investigation of headquarters' benefits from reverse knowledge transfers”, *International Business Review*, Vol. 15 No. 3, pp. 294-312, doi: [10.1016/j.ibusrev.2006.01.002](https://doi.org/10.1016/j.ibusrev.2006.01.002).
- Andersson, U., Forsgren, M. and Holm, U. (2007), “Balancing subsidiary influence in the federative MNC: A business network view”, *Journal of International Business Studies*, Vol. 38 No. 5, pp. 802-818, doi: [10.1057/9781137508829_16](https://doi.org/10.1057/9781137508829_16).
- Beddi, H. and Mayrhofer, U. (2013), “Headquarters-subsidiaries relationships of French multinationals in emerging markets”, *Multinational Business Review*, Vol. 21 No. 2, pp. 174-194, doi: [10.1108/MBR-12-2012-1041](https://doi.org/10.1108/MBR-12-2012-1041).
- Cantwell, J. and Mudambi, R. (2005), “MNE competence-creating subsidiary mandates”, *Strategic Management Journal*, Vol. 26 No. 12, pp. 1109-1128, doi: [10.1002/smj.497](https://doi.org/10.1002/smj.497).
- Chang, S.-J., Van Witteloostuijn, A. and Eden, L. (2010), “From the editors: Common method variance in international business research”, *Journal of International Business Studies*, Vol. 41 No. 1, pp. 178–184, doi: [10.1057/jibs.2009.88](https://doi.org/10.1057/jibs.2009.88).
- Chen, T.J., Chen, H. and Ku, Y.H. (2012), “Resource dependency and parent–subsidiary capability transfers”, *Journal of World Business*, Vol. 47 No. 2, pp. 259-266, doi: [10.1016/j.jwb.2011.04.013](https://doi.org/10.1016/j.jwb.2011.04.013).
- Chen, Y.H., Lin, T.P. and Yen, D.C. (2014), “How to facilitate inter-organizational knowledge sharing: The impact of trust”, *Information & Management*, Vol. 51 No. 5, pp. 568-578, doi: [10.1016/j.im.2014.03.007](https://doi.org/10.1016/j.im.2014.03.007).

- Cheng, H.L. and Huang, M.C. (2020), "Does dual Embeddedness matter? Mechanisms and patterns of subsidiary ambidexterity that links a Subsidiary's dual Embeddedness with its learning strategy", *Asia Pacific Journal of Management*, pp. 1-35.
- Ciabuschi, F., Dellestrand, H. and Martín, O.M. (2011), "Internal embeddedness, headquarters involvement, and innovation importance in multinational enterprises", *Journal of Management Studies*, Vol. 48 No. 7, pp. 1612-1639, doi: [10.1057/9781137508829_12](https://doi.org/10.1057/9781137508829_12).
- Cohen, W.M. and Levinthal, D.A. (1990), "Absorptive capacity: A new perspective on learning and innovation", *Administrative Science Quarterly*, Vol. 35 No. 1, pp. 128-152, doi: [10.2307/2393553](https://doi.org/10.2307/2393553).
- Colakoglu, S., Yamao, S. and Lepak, D.P. (2014), "Knowledge creation capability in MNC subsidiaries: Examining the roles of global and local knowledge inflows and subsidiary knowledge stocks", *International Business Review*, Vol. 23 No. 1, pp. 91-101, doi: [10.1016/j.ibusrev.2013.08.009](https://doi.org/10.1016/j.ibusrev.2013.08.009).
- Conroy, K.M., Collings, D.G. and Clancy, J. (2019), "Sowing the seeds of subsidiary influence: Social navigating and political maneuvering of subsidiary actor", *Global Strategy Journal*, Vol. 9 No. 4, pp. 502-526, doi: doi.org/10.1002/gsj.1323.
- De Beule, F. and Van Beveren, I. (2019), "Sources of open innovation in foreign subsidiaries: An enriched typology", *International Business Review*, Vol. 28 No. 1, pp. 135-147, doi: [10.1016/j.ibusrev.2018.08.005](https://doi.org/10.1016/j.ibusrev.2018.08.005).
- Dellestrand, H. (2011), "Subsidiary embeddedness as a determinant of divisional headquarters involvement in innovation transfer processes", *Journal of International Management*, Vol. 17 No. 3, pp. 229-242, doi: [10.1016/j.intman.2011.05.005](https://doi.org/10.1016/j.intman.2011.05.005).
- Dimitratos, P., Plakoyiannaki, E., Thanos, I.C. and Förbom, Y.K. (2014), "The overlooked distinction of multinational enterprise subsidiary learning: Its managerial and entrepreneurial learning modes", *International Business Review*, Vol. 23 No. 1, pp. 102-114, doi: [10.1016/j.ibusrev.2013.08.003](https://doi.org/10.1016/j.ibusrev.2013.08.003).
- Eapen, A. (2012), "Social structure and technology spillovers from foreign to domestic firms", *Journal of International Business Studies*, Vol. 43 No. 3, pp. 244-263, doi: [10.1057/jibs.2012.2](https://doi.org/10.1057/jibs.2012.2).
- Faems, D., Bos, B., Noseleit, F. and Leten, B. (2018), "Multistep Knowledge Transfer in Multinational Corporation Networks: When Do Subsidiaries Benefit From Unconnected Sister Alliances?", *Journal of Management*, Vol. 46 No. 3, pp. 414-442, doi: [10.1177/0149206318798037](https://doi.org/10.1177/0149206318798037).
- Ferraris, A., Bogers, M.L. and Bresciani, S. (2020), "Subsidiary innovation performance: Balancing external knowledge sources and internal embeddedness", *Journal of International Management*, Vol. 26 No. 4, 100794, doi: [10.1016/j.intman.2020.100794](https://doi.org/10.1016/j.intman.2020.100794).
- Ferraris, A., Santoro, G. and Scuotto, V. (2018), "Dual relational embeddedness and knowledge transfer in European multinational corporations and subsidiaries", *Journal of Knowledge Management*, Vol. 24 No. 3, pp. 519-533, doi: [10.1108/JKM-09-2017-0407](https://doi.org/10.1108/JKM-09-2017-0407).

- Figueiredo, P.N. (2011), “The role of dual embeddedness in the innovative performance of MNE subsidiaries: evidence from Brazil”, *Journal of Management Studies*, Vol. 48 No. 2, pp. 417-440, doi: [10.1111/j.1467-6486.2010.00965.x](https://doi.org/10.1111/j.1467-6486.2010.00965.x).
- Figueiredo, P.N. and Brito, K. (2011), “The innovation performance of MNE subsidiaries and local embeddedness: Evidence from an emerging economy”, *Journal of Evolutionary Economics*, Vo. 21 No. 1 pp. 141–165, doi: [10.1007/978-3-642-15886-5_8](https://doi.org/10.1007/978-3-642-15886-5_8).
- Gammelgaard, J., McDonald, F., Stephan, A., Tüselmann, H. and Dörrenbächer, C. (2012), “The impact of increases in subsidiary autonomy and network relationships on performance”, *International Business Review*, Vol. 21 No. 6, pp. 1158-1172, doi: [10.1016/j.ibusrev.2012.01.001](https://doi.org/10.1016/j.ibusrev.2012.01.001).
- Gao, G.Y., Pan, Y., Lu, J. and Tao, Z. (2008), “Performance of multinational firms’ subsidiaries: Influences of cumulative experience”, *Management International Review*, Vol. 48 No. 6, pp. 749-768, doi: [10.1007/s11575-008-0105-x](https://doi.org/10.1007/s11575-008-0105-x).
- Giroud, A., Jindra, B. and Marek, P. (2012), “Heterogeneous FDI in transition economies—A novel approach to assess the developmental impact of backward linkages”, *World Development*, Vol. 40 No.11, pp. 2206-2220, doi: [10.1016/j.worlddev.2012.03.018](https://doi.org/10.1016/j.worlddev.2012.03.018).
- Gołębiowski, T. and Lewandowska, M.S. (2015), “Influence of internal and external relationships of foreign subsidiaries on innovation performance. Evidence from Germany, Czech Republic and Romania”, *Journal of East European Management Studies*, Vol. 20 No. 3, pp. 304-327.
- Gupta, A.K. and Govindarajan, V. (2000), “Knowledge flows within multinational corporations”, *Strategic Management Journal*, Vol. 21 No. 4, pp. 473-496, doi: [10.1002/\(SICI\)1097](https://doi.org/10.1002/(SICI)1097).
- Hällgren, M., Rouleau, L. and De Rond, M. (2018), “A matter of life or death: How extreme context research matters for management and organization studies”, *Academy of Management Annals*, Vol. 12 No. 1, pp. 111-153, doi: [10.5465/annals.2016.0017](https://doi.org/10.5465/annals.2016.0017).
- Hauser, S., Kraizberg, E. and Dahan, R. (2003), “Price behavior and insider trading around seasoned equity offerings: the case of majority-owned firms”, *Journal of Corporate Finance*, Vol. 9 No. 2, pp. 183-199, doi: [10.1016/S0929-1199\(02\)00005-6](https://doi.org/10.1016/S0929-1199(02)00005-6).
- Heirati, N., O’Cass, A., Schoefer, K. and Siahtiri, V. (2016), “Do professional service firms benefit from customer and supplier collaborations in competitive, turbulent environments?”, *Industrial Marketing Management*, Vol. 55 No. 1, pp. 50-58, doi: [10.1016/j.indmarman.2016.02.011](https://doi.org/10.1016/j.indmarman.2016.02.011).
- Ho, Y.C. (2014), “Multilateral knowledge transfer and multiple embeddedness”, *Multinational Business Review*, Vol. 22 No. 2, pp. 155-175, doi: [10.1108/MBR-04-2014-0010](https://doi.org/10.1108/MBR-04-2014-0010).
- Isaac, V.R., Borini, F.M., Raziq, M.M. and Benito, G.R. (2019), “From local to global innovation: The role of subsidiaries’ external relational embeddedness in an emerging market”, *International Business Review*, Vol. 28 No. 4, pp. 638-646, doi: [10.1016/j.ibusrev.2018.12.009](https://doi.org/10.1016/j.ibusrev.2018.12.009).

- Jindra, B., Giroud, A. and Scott-Kennel, J. (2009) "Subsidiary roles, vertical linkages and economic development: Lessons from transition economies", *Journal of World Business*, Vol. 44 No. 2, pp. 167-179, doi: [10.1016/j.jwb.2008.05.006](https://doi.org/10.1016/j.jwb.2008.05.006).
- Liu, Y., Liu, T. and Li, Y. (2014), "How to inhibit a partner's strong and weak forms of opportunism: Impacts of network embeddedness and bilateral TSIs", *Industrial Marketing Management*, Vol. 43 No. 2, pp. 280-292, doi: [10.1016/j.indmarman.2013.08.010](https://doi.org/10.1016/j.indmarman.2013.08.010).
- Minbaeva, D., Pedersen, T., Björkman, I., Fey, C.F. and Park, H.J. (2003), "MNC knowledge transfer, subsidiary absorptive capacity, and HRM", *Journal of International Business Studies*, Vol. 34 No. 6, pp. 586-599, doi: [10.1057/palgrave.jibs.8400056](https://doi.org/10.1057/palgrave.jibs.8400056).
- Minbaeva, D.B. (2007), "Knowledge transfer in multinational corporations", *Management International Review*, Vol. 47 No. 4, pp. 567-593, doi: [0.1007/s11575-007-0030-4](https://doi.org/10.1007/s11575-007-0030-4).
- Nair, S.R., Demirbag, M. and Mellahi, K. (2016), "Reverse knowledge transfer in emerging market multinationals: The Indian context", *International Business Review*, Vol. 25 No. 1, pp. 152-164, doi: [10.1016/j.ibusrev.2015.02.011](https://doi.org/10.1016/j.ibusrev.2015.02.011).
- Nair, S.R., Demirbag, M., Mellahi, K. and Pillai, K.G. (2018), "Do parent units benefit from reverse knowledge transfer?", *British Journal of Management*, Vol. 29 No. 3, pp. 428-444, doi: [10.1111/1467-8551.12234](https://doi.org/10.1111/1467-8551.12234).
- Najafi-Tavani, Z., Giroud, A. and Sinkovics, R.R. (2012), "Mediating effects in reverse knowledge transfer processes", *Management International Review*, Vol. 52 No. 3, pp. 461-488, doi: [10.1007/s11575-011-0097-9](https://doi.org/10.1007/s11575-011-0097-9).
- Nell, P.C. and Andersson, U. (2012), "The complexity of the business network context and its effect on subsidiary relational (over-) embeddedness", *International Business Review*, Vol. 21 No. 6, pp. 1087-1098, doi: [10.1016/j.ibusrev.2011.12.002](https://doi.org/10.1016/j.ibusrev.2011.12.002).
- Nguyen, T.V. and Hong, J.F. (2013), "Local knowledge acquisition of foreign subsidiaries in Vietnam and China", *Multinational Business Review*, Vol. 21 No. 4, pp. 312-333, doi: [10.1108/MBR-04-2013-0017](https://doi.org/10.1108/MBR-04-2013-0017).
- Noorderhaven, N. and Harzing, A.W. (2009), "Knowledge-sharing and social interaction within MNEs", *Journal of International Business Studies*, Vol. 40 No. 5, pp. 719-741, doi: [10.1057/jibs.2008.106](https://doi.org/10.1057/jibs.2008.106).
- Perri, A. and Andersson, U. (2014), "Knowledge outflows from foreign subsidiaries and the tension between knowledge creation and knowledge protection: Evidence from the semiconductor industry", *International Business Review*, Vol. 23 No. 1, pp. 63-75, doi: [10.1016/j.ibusrev.2013.08.007](https://doi.org/10.1016/j.ibusrev.2013.08.007).
- Phene, A. and Almeida, P. (2008), "Innovation in multinational subsidiaries: The role of knowledge assimilation and subsidiary capabilities", *Journal of International Business Studies*, Vol. 39 No. 5, pp. 901-919, doi: [10.1057/palgrave.jibs.8400383](https://doi.org/10.1057/palgrave.jibs.8400383).
- Podsakoff, P.M., MacKenzie, S.B. and Podsakoff, N.P. (2012), "Sources of method bias in social science research and recommendations on how to control it", *Annual Review of Psychology*, Vol. 63 No. 1, pp. 539-569, doi: [10.1146/annurev-psych-120710-100452](https://doi.org/10.1146/annurev-psych-120710-100452).

- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), “Common method biases in behavioral research: A critical review of the literature and recommended remedies”, *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903, doi: [10.1037/0021-9010.88.5.879](https://doi.org/10.1037/0021-9010.88.5.879).
- Pu, M. and Soh, P.H. (2018), “The role of dual embeddedness and organizational learning in subsidiary development”, *Asia Pacific Journal of Management*, Vol. 35 No. 2, pp. 373-397, doi: [10.1007/s10490-017-9513-4](https://doi.org/10.1007/s10490-017-9513-4).
- Rabbiosi, L. and Santangelo, G.D. (2013), “Parent company benefits from reverse knowledge transfer: The role of the liability of newness in MNEs”, *Journal of World Business*, Vol. 48 No. 1, pp. 160-170, doi: [10.1016/j.jwb.2012.06.016](https://doi.org/10.1016/j.jwb.2012.06.016).
- Raziq, M.M., Benito, G.R. and Ahmad, M. (2021), “Institutional Distance and MNE-subsidiary Initiative Collaboration: The Role of Dual Embeddedness”, *European Management Review*, doi: [10.1111/emre.12454](https://doi.org/10.1111/emre.12454).
- Sadeghi, V.J., Nkongolo-Bakenda, J.-M., Anderson, R.B. and Dana, L.P. (2019), “An institution-based view of international entrepreneurship: A comparison of context-based and universal determinants in developing and economically advanced countries”, *International Business Review*, Vol. 28 No. 6, 101588, doi: [10.1016/j.ibusrev.2019.101588](https://doi.org/10.1016/j.ibusrev.2019.101588).
- Schleimer, S.C. and Pedersen, T. (2003), “The driving forces of subsidiary absorptive capacity”, *Journal of Management Studies*, Vol. 50 No. 4, pp. 646-672, doi: [10.1111/joms.12010](https://doi.org/10.1111/joms.12010).
- Sharma, R., Yetton, P. and Crawford, J. (2009), “Estimating the effect of common method variance: The method—Method pair technique with an Illustration from TAM Research”, *MIS Quarterly*, Vol. 33 No. 3, pp. 473-490, doi: [10.2307/20650305](https://doi.org/10.2307/20650305).
- Sofka, W., Shehu, E. and de Faria, P. (2014), “Multinational subsidiary knowledge protection—Do mandates and clusters matter?” *Research Policy*, Vol. 43 No. 8, pp. 1320-1333, doi: [10.1016/j.respol.2014.05.006](https://doi.org/10.1016/j.respol.2014.05.006).
- Song, J. (2014), “Subsidiary absorptive capacity and knowledge transfer within multinational corporations”, *Journal of International Business Studies*, Vol. 45 No.1, pp. 73-84, doi: [10.1057/jibs.2013.55](https://doi.org/10.1057/jibs.2013.55).
- Song, S. (2017), “Host Market Uncertainty, Subsidiary Characteristics, and Growth Option Exercise”, *Long Range Planning*, Vol. 50 No. 1, pp. 63-73, doi: [10.1016/j.lrp.2016.03.001](https://doi.org/10.1016/j.lrp.2016.03.001).
- UNCTAD. (2017) “World Investment Report: Investment and the Digital Economy”, *United Nations, Geneva*. <https://unctad.org/webflyer/world-investment-report-2017>.
- Wang, S., Tong, T.W., Chen, G. and Kim, H. (2009), “Expatriate utilization and foreign direct investment performance: The mediating role of knowledge transfer”, *Journal of Management*, Vol. 35 No. 5, pp. 1181-1206, doi: [10.1177/0149206308328511](https://doi.org/10.1177/0149206308328511).
- World Bank (2020a), Islamic Republic of Iran. An overview for the full five-year period from 2016/17 to 2021/22. <https://www.worldbank.org/en/country/iran/overview>.

- World Bank (2020b), World Bank list of economies. Retrieved June 2020. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>.
- Xu, H., Guo, H., Zhang, J. and Dang, A. (2018), “Facilitating dynamic marketing capabilities development for domestic and foreign firms in an emerging economy”, *Journal of Business Research*, Vol. 86 No. 1, pp. 141-152, doi: [10.1016/j.jbusres.2018.01.038](https://doi.org/10.1016/j.jbusres.2018.01.038).
- Yamin, M. and Andersson, U. (2011), “Subsidiary importance in the MNC: What role does internal embeddedness play?”, *International Business Review*, Vol. 20 No. 2, pp. 151-162, doi: [10.1016/j.ibusrev.2010.07.005](https://doi.org/10.1016/j.ibusrev.2010.07.005).
- Yang, Q., Mudambi, R. and Meyer, K.E. (2008), “Conventional and reverse knowledge flows in multinational corporations”, *Journal of Management*, Vol. 34 No. 5, pp. 882-902, doi: [10.1177/0149206308321546](https://doi.org/10.1177/0149206308321546).
- Zhang, J., Jiang, H., Wu, R. and Li, J. (2018), “Reconciling the Dilemma of Knowledge Sharing: A Network Pluralism Framework of Firms’ R&D Alliance Network and Innovation Performance”, *Journal of Management*, Vol. 45 No. 7, pp. 2635-2665, doi: [10.1177/0149206318761575](https://doi.org/10.1177/0149206318761575).