European Management Journal 35 (2017) 314–326

Contents lists available at ScienceDirect

European Management Journal

journal homepage: www.elsevier.com/locate/emj

Crossing borders with social media: Online social networks and FDI

Jordi Paniagua [a, *], Pawel Korzynski [b, c], Alicia Mas-Tur [d]

[a] Catholic University of Valencia San Vicente Mártir, Faculty of Economics and Business, Calle Corona 34, 46003 Valencia, Spain
[b] Kozminski University, Jagiellonska 57-59, 03-301 Warsaw, Poland
[c] Harvard University, Cambridge, MA 02138, United States
[d] University of Valencia, Avda Tarongers S/N, 46022 Valencia, Spain

ARTICLE INFO

Article history:
Received 23 November 2015
Received in revised form
22 August 2016
Accepted 8 September 2016
Available online 24 September 2016

Keywords:
Internalization theory
Capability-based view
Foreign direct investment
Networking technologies
Social media
Online social networks

ABSTRACT

Social media is embedded in today's internationalization strategy. Companies extend their reach into foreign countries by posting and tweeting. Firms also enhance their mobile capabilities in foreign markets (e.g., knowledge and reputation) through user-generated content in online social networks. Levering on the capabilities-based theory of the multinational enterprise, this paper builds upon a resource-based, industry/network-based, and institution-based view framework. The study provides a comprehensive conceptual and empirical model to explain the effect of social networks on foreign direct investment. Empirical analysis in a global panel dataset of >4500 multinational enterprises suggests that online social networks' activity stimulates foreign capital expenditure and new affiliates. In addition, the article explores the relevance of customer capabilities along with sectoral and institutional moderating effects.

1. Introduction

Until recently, one important feature of today's international business environment seemed to have escaped international business scholars' attention: online social networks (OSNs). The social media environment in which contemporary firms operate has changed the ways firms act, hire staff, and relate to customers and providers. Casual evidence suggests an interplay where OSNs fuel cross-border investment. During May 2016, *#SpainLovesTesla* was a trending topic on Twitter. A single post in a Spanish automobile online forum website started a spontaneous collaborating campaign on Facebook, Twitter, and change.org to convince Tesla Motors, an electrical car manufacturer, to locate a production plant in Valencia (Spain). On 12th May, Tesla's CEO Elon Musk tweeted (in Spanish) "I love you too." Although shortly after Tesla denied any short-term plans to invest in Valencia, local authorities initiated a prospective plan to attract Tesla's production plant.

This paper probes into the relationship between social networks and foreign direct investment (FDI) drawing on a general theory of international business that calls for the interaction between firm capabilities and country or industry advantages (Cantwell, 2014). The study provides a comprehensive conceptual model that embeds the three legs of the international business strategy tripod: resource-based, industry/network-based, and institution-based views (Peng, Wang, & Jiang, 2008), incorporated in the mobile capabilities theory of the multinational enterprise (MNE; Nocke & Yeaple, 2007; Teece, 2014). In brief, we frame a firm's activities in social media (i.e., likes and followers) as resources that enhance FDI-oriented mobile capabilities (e.g., headquarter knowledge capabilities associated with marketing, financial services, customer, and affiliate management or foreign location planning). Firm and industry characteristics as well as institutional settings determine the extent of the influence of OSNs on FDI.

The data are an important motivation for this study. This study uses data from a set of >4500 individual firms from 87 countries and 40 industries during 2005–2012. A basic cross-section inspection of FDI and OSN activity data suggests a positive correlation between FDI and user-generated content on networking sites. However, this research uses panel data techniques to provide robust evidence that suggests that OSN activity has a significant influence on firms' border crossing.

Generally, studies frame social media as a convenient resource to enhance firms' capabilities, particularly those associated with international business, such as headquarter services. Social media

* Corresponding author.
E-mail addresses: jordi.paniagua@ucv.es (J. Paniagua), pkorzynski@fas.harvard.edu (P. Korzynski), Alicia.mas@uv.es (A. Mas-Tur).

http://dx.doi.org/10.1016/j.emj.2016.09.002
0263-2373/

emerges as a key factor for understanding concepts related to headquarter services; for example, business performance (Enders, Hungenberg, Denker, & Mauch, 2008; Paniagua & Sapena, 2014a), customer relationship management (CRM; Trainor, Andzulis, Rapp, & Agnihotri, 2014), human resources (Korzynski, 2013), marketing (DesAutels, 2011; Leeflang, Verhoef, Dahlström, & Freundt, 2014; Weinberg & Pehlivan, 2011), brand management (Sabate, Berbegal-Mirabent, Cañabate, & Lebherz, 2014), finance (Kaplan & Haenlein, 2010), and sports business (Korzynski & Paniagua, 2016). Unlike the determinants of the international business model (e.g., Brouthers & Dikova, 2010; Kolstad & Wiig, 2012), little research has examined the influence of social media on FDI (Chandra & Coviello, 2010; Kiss & Danis, 2008, 2010; Maltby, 2012; Sigfusson & Chetty, 2013). This study aims at filling this gap.

Corporations are beginning to grasp the significant strategic role of social media and its impact on business results. According to McLellan (2014), digital marketing budgets as a percentage of revenue were 3.1% in 2013, a 20% increase in budgets from 2012. Budgets rose again in 2014, this time by 10%. Digital advertising accounted for the largest portion (12.2%) of 2013 digital marketing budgets. Gartner's Digital Marketing Spending Survey forecasted that an increase in the 2014 budget would be in digital advertising, mobile marketing, digital commerce, corporate websites, and social networks.

Hence, social media networks often start trends and cause initial corporate excitement. However, their implications for international business remain largely unknown. Several questions linking FDI and OSNs remain unanswered. For example, (1) What are the business dynamics through which OSNs associate with FDI? (2) Which types of firms are better at transforming social media resources into internationalization capabilities? (3) Are there any sectorial differences or industry trends? (4) What is the role of the institutional setting of the firm's home country? Hence, the role of OSNs on multinational corporations' international endeavors remains unclear.

The main contributions of this study are the following: First, this research drives international business theory forward by providing a comprehensive explanation of how social media interacts with FDI. Although choosing the best international location for foreign production is a priority for international managers, the FDI literature fails to discuss the role of OSNs in identifying the best FDI strategies. Second, this research quantifies the effect of online social-networking platforms (Twitter and Facebook) on FDI (capital expenditure and number of affiliates) and studies the moderation of firm-level, industry, and institutional characteristics. Finally, this research examines the effect of OSNs on FDI levels (as a measure of firm size and international experience) by quantile regressions.

The remainder of the study is structured as follows: the next section builds the conceptual model. Section 3 describes the data. Section 4 describes the empirical strategy. Section 5 discusses results. Finally, Section 6 presents the conclusions.

2. Conceptual framework

2.1. Resource- and capability-based views

We draw the conceptual link between OSNs and FDI from the resource- and capability-based views (Barney, 1991; Day, 1994; Nocke & Yeaple, 2007; Teece, 2014). According to the resource-based view, an organization is a composition of tangible and intangible resources and capabilities required for a competitive advantage (Barney, 2001). Resource–capability combination indicates that there is an interaction between resources and capabilities (Kamoche, 1996). Business performance depends on the effectiveness of the conversion of resources (e.g., assets and knowledge processes) into capabilities (e.g., sales abilities, consumer links, reputation, and placement; Peteraf, 1993).

Following the resource- and capability-based views, scholars have identified the mechanisms by which social media enhances business performance. Paniagua and Sapena (2014a) identified three channels, in addition to social advertising, transforming social media resources into business performance capabilities. In this sense, social capital, customer-revealed preferences, and online corporate networking play decisive roles in business performance. Quinton and Wilson (2016) focus on corporate networking on professional networking sites and show how LinkedIn enhances business performance. Moreover, Trainor et al. (2014) posited that social media enhancements positively affect capabilities related to internal systems.

Therefore, a natural way to relate OSNs and FDI is to study the firms' effectiveness in converting social media resources (identity, conversations, sharing, presence, relationships, reputation, and groups; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011) into internationalization capabilities to achieve international competitive advantages. The challenge is to identify appropriate FDI and OSN capabilities and their underlying mechanisms.

Nocke and Yeaple (2007) demonstrate that FDI is driven by complementarities between internationally mobile and nonmobile capabilities. Particularly, the authors show that the most productive firms with mobile capabilities (i.e., those that can be easily transferred across borders) engage in greenfield FDI. In this setup, OSNs enhance headquarters' mobile capabilities and drive firms to invest across borders.

In light of the significance of mobile capabilities for FDI, we focus on the effect of online networking on enhancing the headquarters' mobile capabilities. The specialized literature refers to these capabilities as a bundle of headquarter services. Initially, headquarter services were understood as blueprints developed by the headquarters in the source country (Helpman, 1984). However, today, these services include a broad variety of mobile capabilities such as management, marketing, or financial assistance, which are transferred from the source-country headquarters to the affiliate in the host country.

Antràs and Helpman (2004) explain that firms may internalize foreign costs and engage in FDI through these services. Therefore, foreign subsidiaries pay a lower price than domestic firms for some of the business activities, which are centralized at the headquarters (e.g., management, human resources, and marketing). From a theoretical perspective, headquarter services also allow the subsidiary to reinvest in the foreign market at a lower cost (Paniagua, 2015). In addition, headquarter services may reduce the cost of doing business abroad in emerging markets by implementing better control mechanisms in the affiliates (Björkman, Barner-Rasmussen, & Li, 2004; Chen, 2008).

In a nutshell, we study how OSNs enhance two types of headquarters' mobile capabilities: knowledge and reputation. OSNs have positive effects on these sets of mobile capabilities, which are essential for FDI.

Access to knowledge and the capability to organize knowledge-incentive assets are at the center of the mobile capabilities of the international firm. Many studies show that knowledge capabilities, which are easily transferred to foreign affiliates, are especially relevant for FDI (Filipescu, Prashantham, Rialp, & Rialp, 2013; Fletcher, Harris, Richey, & Jr., 2013; Griffith, Kiessling, & Dabic, 2012; Perri & Andersson, 2014). For example, some FDI studies examine the capability of acquiring knowledge and financial resources through business networks (Elango & Pattnaik, 2007).

In parallel, a growing strand of literature highlights that OSNs enhance knowledge capabilities. As in the case with crowdfunding, a process that refers to the online collaboration of many individuals

aimed at raising money (Cumming & Johan, 2016; Belleflamme, Lambert, & Schwienbacher, 2014). Beyond acquiring financial resources, the capability of acquiring knowledge might also be supported by OSNs. For example, Sanofi, one of the top five pharmaceutical companies in the world, used Facebook to exchange knowledge through online conversations about a new, globally introduced vaccine (Morgan, 2015).

In addition, OSNs enable the transfer of knowledge to the affiliate through social corporate networking (Korzynski, 2013; Paniagua & Sapena, 2014a). Apart from well-known OSNs, such as Facebook or LinkedIn, companies use internal OSNs, which are appropriate for their use within the organization (Korzynski, 2013). Internal OSNs such as Yammer or Chatter may be cost-effective for organizing communication processes among employees, suppliers, and partners that are globally dispersed. Organizations have started to use online networking to support communication with clients and to recruit candidates. Consequently, social media helps headquarters identify the best-suited candidates to manage their foreign affiliates.

Moreover, reputation is a relevant mobile capability that is automatically transferred toward the affiliate. The headquarters transfer not only information but also brand reputation, which comprises all pieces of knowledge about the organization (Schultz, Mouritsen, & Gabrielsen, 2001). Social media transmits details about reputation and identity (Kietzmann et al., 2011) and helps consumers evolve to international entrepreneurs (Chandra & Coviello, 2010). These international entrepreneurs use OSN sites to develop and harness their network relationships (Sigfusson & Chetty, 2013).

Corporations with a favorable reputation improve their corporate social performance (Brammer & Pavelin, 2006; Fieseler, Fleck, & Meckel, 2010). Improving corporate social performance results in a more favorable treatment from host markets and a more favorable stance from policymakers toward foreign entry. Moreover, social networking helps MNEs overcome discrimination stemming from low-foreign acceptability and legitimacy granted to foreign firms outside their domestic market (Forstenlechner & Mellahi, 2011; Gifford, Kestler, & Anand, 2010; Kostova & Zaheer, 1999). For example, Coca-Cola's name-tag campaign (Pendergrast, 2000) increased host customers' identification with the brand. The campaign also provided Coca-Cola with vast knowledge of certain foreign customer trends (e.g., names, ages, tastes, etc.), made possible through social platforms. Coca-Cola thereby gained valuable knowledge to improve estimates of foreign production.

Hypothesis 1. The activity of a firm's OSNs (Facebook fans and Twitter followers) is positively associated with FDI.

The FDI literature identifies three measures for cross-border investment activity. In addition to the monetary quantities invested, capital expenditure or intensive margin, scholars study affiliate count (or extensive margin) and jobs (foreign employment created by multinationals). Recent studies on FDI explore the differential effect of independent variables on these three measures to obtain a brighter picture (Paniagua & Sapena, 2014b). Particularly, the number and location of affiliates are relevant for FDI.

Scholars suggest that the number of affiliates or foreign affiliates (extensive margin), rather than the amount invested, is largely responsible for economic aggregate fluctuations such as gross domestic product (GDP; Gabaix, 2011), firm's sales (di Giovanni, Levchenko, & Méjean, 2014), and trade (Helpman, Melitz, & Rubinstein, 2008). Paniagua, Figueiredo, and Sapena (2015) demonstrate how a single foreign project has significant impact on FDI levels, especially on the upper levels. They show that regressing individual projects has a greater influence, rather than dollars, in reducing the firm-heterogeneity bias. Mayer and Ottaviano (2008) find similar results when they decompose the number of foreign affiliates and average sales per affiliate for several European countries; several companies are responsible for most of the aggregate FDI. Thus, the use of detailed datasets has been keen to unravel empirical puzzles. For example, Llano, Minondo, and Requena (2011) used a finer geographical grid for a finer estimation of negative impact of distance on shipments. In addition, the extensive margin gives information on the creation of new FDI partners.

Research also highlights that the firm's mobile capabilities influence its location behavior (Beugelsdijk, McCann, & Mudambi, 2010; McCann & Mudambi, 2005) and entry mode (Nocke & Yeaple, 2007). Headquarters choose the best location for their affiliate from a wide range of countries. Headquarters often accumulate high costs in searching for locations, and interpretation of domestic cultural legal norms, tastes, or corporate culture (Kostova & Zaheer, 1999; Mezias, 2002; Paniagua & Sapena, 2013). Headquarters often search locations to access technology available in other locations (Chung & Alcácer, 2002). Mining user-generated data, headquarters may identify potential locations for their affiliates. Therefore, online networking reduces the cost of uncertainty that may result from headquarters' unfamiliarity with the foreign environment. For example, customers reveal their preferences in sites such as Facebook or Twitter. Companies use this information to anticipate demand and customers' tastes (Paniagua & Sapena, 2014a). Consequently, companies can adapt better to local demand and competition through social media. Many MNEs are attracted to global cities. OSNs favor global connections, cosmopolitanism, and advanced producer services, offsetting costs of doing business in global cities (Goerzen, Asmussen, & Nielsen, 2013). Therefore, OSNs should have an effect on the location pattern through the extensive margin (or number of affiliates).

Therefore, we can refine our first hypothesis:

Hypothesis 1a. The activity of a firm's OSNs has a positive effect on foreign capital expenditure.

Hypothesis 1b. The activity of a firm's OSNs has a positive effect on the number of cross-border affiliates.

2.2. Moderating effects

2.2.1. Customer capabilities

Real-time conversations occurring on OSNs (Kietzmann et al., 2011) allow companies to ensure better timing and knowledge of the foreign market entry. OSN experts indicate that platforms such as Facebook and YouTube are about sharing individual experiences (Munzel & Kunz, 2013). The experience data from individuals might be used to forecast economic indicators such as automobile sales (Choi & Varian, 2012), box office (Du, Xu, & Huang, 2014), or housing prices (Wu & Brynjolfsson, 2013). Thus, companies with end customers or B2C (Business to Consumer) capabilities might be able to take more advantages of social media through real-time conversations.

Russell and Brannan (2016) point out that organizations may post some insights about themselves on professional OSNs such as LinkedIn to engage in employer branding process. According to FDI researchers, employer brand can serve as a source for competitive advantage during foreign market entry (Mandal, 2014).

However, recently, experience sharing has been increasingly applied to business customers or B2B (Business to Business) capabilities associated with internal networking tools. For instance, firms that develop social CRM enhance their performance (Trainor et al., 2014). In turn, these firms acquire capabilities that make them

better at handling other social media platforms.

Wang, Pauleen, and Zhang (2016) demonstrate that social media applications affect B2B communication and improve business performance in small- and medium-sized enterprises (SMEs). Furthermore, the number of B2B examples of knowledge and financial resources acquisitioned through OSNs is growing (Kärkkäinen, Jussila, & Multasuo, 2012). B2B companies increasingly interact with different stakeholders to gain access to new ideas, feedback, and solutions for the development of their products and services (Simula & Vuori, 2012).

Hypothesis 2. The firm's customer capabilities (B2B or B2C) moderate the relationship between OSNs and FDI.

2.2.2. Industry/network-based view

The industry-based view (Porter, 1981) relates firm performance to the characteristics (e.g., competitiveness vs. collaboration) of a particular industry (Peng et al., 2008). According to this theory, FDI largely depends on industry or sectorial trends. The industry-based view is extremely related to industrial network theory. According to network proponents, FDI depends on a firm's position in a network (Madsen & Servais, 1997). Particularly, the network's nature and structure determine the level and nature of FDI. From a network perspective, the FDI aims to preserve, strengthen, and improve the value of some important relationships in the network (Chen, 2003). The network theory is also popular to explain the internationalization of small firms (Ojala, 2009; Maekelburger et al., 2012).

Studies also highlight the importance of general networks in internationalization. Financial networks are crucial for the internationalization of entrepreneurial ventures, especially in transition economies (Manolova, Manev, & Gyoshev, 2010). Traditional networks, however, have distinct opportunity horizons that limit the reach of tie-based exchanges and potentially lead to suboptimal internationalization efforts (Ciravegna, Majano, & Zhan, 2014; Ellis, 2011; Musteen, Francis, & Datta, 2010). Maltby (2012) claims that OSNs offer tools to internationalize start-ups rapidly. Kiss and Danis (2010) report the relevance of social networks in the internationalization process of new ventures in transition economies. Other studies demonstrate that early adoption of social media has benefits mainly in terms of system age, size, organizational form, advertising royalty rates, industry, and internationalization (Kalinic, Sarasvathy, & Forza, 2014; Perrigot, Basset, & Cliquet, 2011).

Different industries create various types of networks, which will affect the nature of OSN's effect on FDI. The seminal work of Pavitt (1984) mapped industries into three sectors according to the networks created among firms: science firms (which create external networks, which span outside of firm boundaries), supplier-oriented firms (which are less innovative and create networks only with providers), and production firms (which create internal networks within firm boundaries).

Science firms develop new products or processes and have a high degree of appropriability from patents, secrecy, and tacit know-how. They are usually high-tech firms that rely on research and development (R&D) from both in-house sources and university research, including industries such as pharmaceuticals and electronics. Science firms create external networks with other agents such as universities or research institutes. The theory of social capital suggests that external networks of a company contribute significantly to its performance (Lee, Lee, & Pennings, 2001; Leenders & Gabbay, 1999). Thus, organizations' ability to mobilize external resources, attract customers, and identify business opportunities depends on external networks because social relations mediate financial transactions and confer organizational legitimacy (Granovetter, 1985).

Science firms are used to networking with many and diverse external agents, which resembles in many ways of interaction with an online crowd. With the help of social media, these firms benefit from a faster and flatter production cycle, cutting personnel costs and overall complexity of the process. Instead of sending blueprints to the affiliate, the affiliate itself may perform research using the online crowd. Therefore, social media may reduce the transfer of internalized capabilities, such as design and R&D.

Production-intensive firms aim for a substitution of machines for labor, which would reduce production costs, finding their main source of innovation on these processes. They are usually specialized on large-scale fabrication and assembly production. This sector includes raw and standard material mass-producers as well as large assemblers.

However, supplier-dominated firms are those whose innovation is mainly driven by other firms; they, therefore, rely on external sources. They are usually small and found mostly in traditional manufacturing, agriculture, housebuilding, informal household production, and many professional financial and commercial services. Those firms usually have weak internal R&D and engineering capabilities.

Supplier-dominated and production firms can be found mainly in traditional sectors of manufacturing and in agriculture, housebuilding, and informal household production, and many professional, financial, and commercial services. In most cases, they are small, and their in-house R&D and engineering capabilities are weak (Pavitt, 1984). Even a small and weak company can perform FDI if external resources can be exploited; however, leverage will only succeed if the investor handles network relationships competently (Chen, 2003). The impact of OSNs on supplier and production firms should therefore be lower than on science firms.

Thus, we can state that the type of network of each different industry will affect the characteristic of an OSN's effect on FDI.

Hypothesis 3. The type of industry network (i.e., science, production, or supplier) moderates the relationship between OSNs and FDI.

2.2.3. Institutional-based view

Institutional theory establishes that institutions influence the evolution of economic activities and determine the behavior of firms (Acemoglu & Johnson, 2005). Kostova (1999) introduces the concept of institutional distance as the determinant factor for FDI. Foreign investors possess abilities to bridge institutional distances between home and host countries (Xu & Shenkar, 2002). Therefore, the impact of the institutional environment has a significant role on firm's international activity, and many studies introduce institutional factors to explain firm's international activity (Venzin, Kumar, & Kleine, 2008).

Home- and host-country institutional agents are FDI push factors, which can reduce institutional distance (Kostova & Roth, 2002). However, the quality of institutions is more noticeable when institutions are weak in poor regulatory environments (Wu & Chen, 2014). Institutional settings matter particularly for companies crossing borders. Paniagua and Sapena (2014b) show that legal rights have a greater positive effect on FDI's margins and foreign jobs in less developed countries than in more developed countries. Makino, Isobe, and Chan (2004) concluded that corporate and affiliate effects associated with the resource-based view tend to be less important than country or industry effects in countries with underdeveloped institutions.

This fact is relevant for our study as social media might have a lower effect on those countries where activity in social media is

restricted by weak institutions.

Hypothesis 4. Institutional quality moderates the relationship between OSNs and FDI.

3. Data

The use of firm-level data is a constant trend in international business studies because these data reduce endogeneity and firm-heterogeneity estimation bias (Greenaway & Kneller, 2007). This study uses panel data from a set of 4563 individual firms from 87 countries and 40 activity sectors during the 2006–2012 period.

An important motivation for this research is the empirical regularities observed in the data. Fig. 1 represents a three-dimensional plot of our data. Each axis represents a dimension from the conceptual model. FDI (measured as the log of capital investment), Facebook fans, and Twitter followers correspond to the X, Y, and Z axes, respectively.

Each bubble identifies a single company and its position. The Cartesian space is determined by the relative magnitude of the three coordinates. The points represented on each of the three planes are the projections of each point. These projections relate variables by pairs. Figs. 2 and 3 depict the scatter plot of these projections or the pairwise correlations of FDI with Facebook and Twitter, respectively. We can appreciate that FDI is positively associated with OSN activity data. This stylized observation invites further empirical research to unravel structural and robust relationships between FDI and social networks.

To construct a dynamic measure of the social media followers, we have interpolated the number of social media followers with a country measure of social media penetration:

$$SM_{fct} = \frac{SMU_t \cdot Internet_{ct}}{SMU_{2012} \cdot Internet_{c2012}} \cdot SM_{f2012} \quad (1)$$

where SMU_t is the percentage of social media users over total number of Internet users. We obtained this figure from Pew Research (http://www.pewresearch.org/data-trend/media-and-technology/social-networking-use/). $Internet_{ct}$ is the number of Internet users per 100 people in country c and year t. We obtained these data from the World Bank. SM_{f2012} is the number of social media followers that the company f has accumulated in 2012.

OSN variables (followers and likes) were obtained directly from the official HQ corporate OSN profiles for Twitter and Facebook. We captured the number of followers, likes, and tweets for each firm in the sample until the end of 2012. Social media followers are an accumulative process, meaning that the followers that we observe in certain data also include past followers. Facebook was launched in February 2004 and Twitter in July 2006. The empirical analysis, therefore, should correlate FDI and OSNs during the 2006–2012 period.

We calculated FDI capital expenditure as the yearly amount each firm in the sample invested in greenfield investments, measured in constant 2005 million USD. Nocke and Yeaple (2007) demonstrate that when firms differ in their mobile capabilities, the most productive companies choose greenfield investments rather than mergers and acquisitions. Therefore, greenfield is the optimal FDI type to study the effects of OSNs. Affiliates were frequency variables, giving the aggregate number of new foreign affiliates for each sample firm each year.

We obtained the FDI-related data (i.e., capital and affiliates) from FDIMarkets (2013). FDIMarkets is one of the most popular datasets to study FDI data. Several studies, including the UNCTAD's World Investment Report, use this dataset as their source of greenfield FDI data.

We imposed one requirement to include firms in the sample: the firm must have an active official profile on Twitter or Facebook. This condition reduced the search results to countries shown in Table 1 and the activity sectors reported in Table 2 (The list of companies is available upon request).

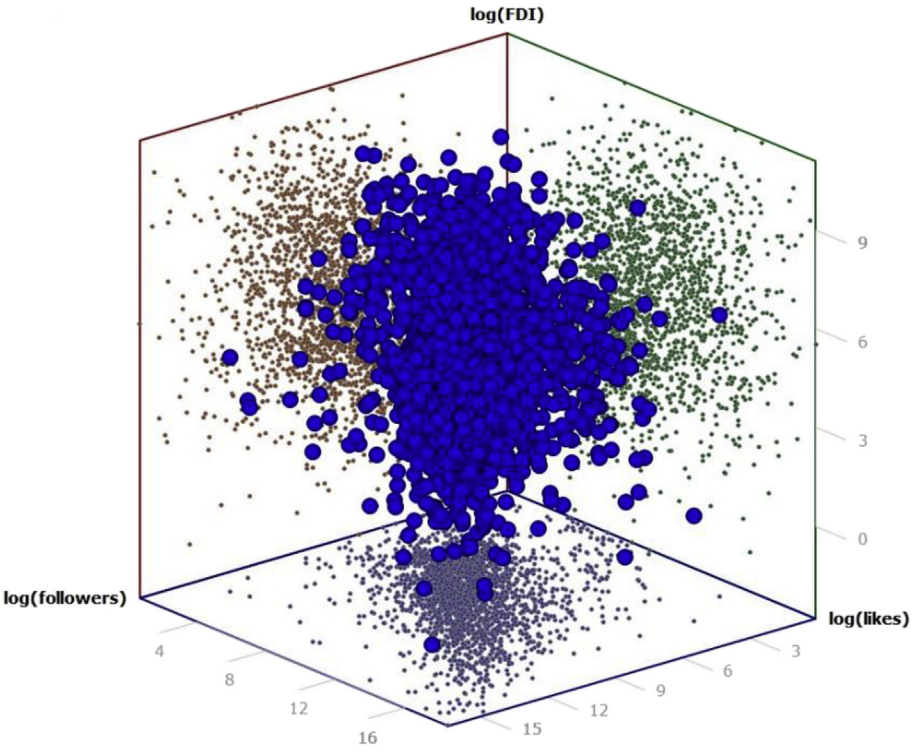

Fig. 1. 3D plot of FDI and online social network activity data.

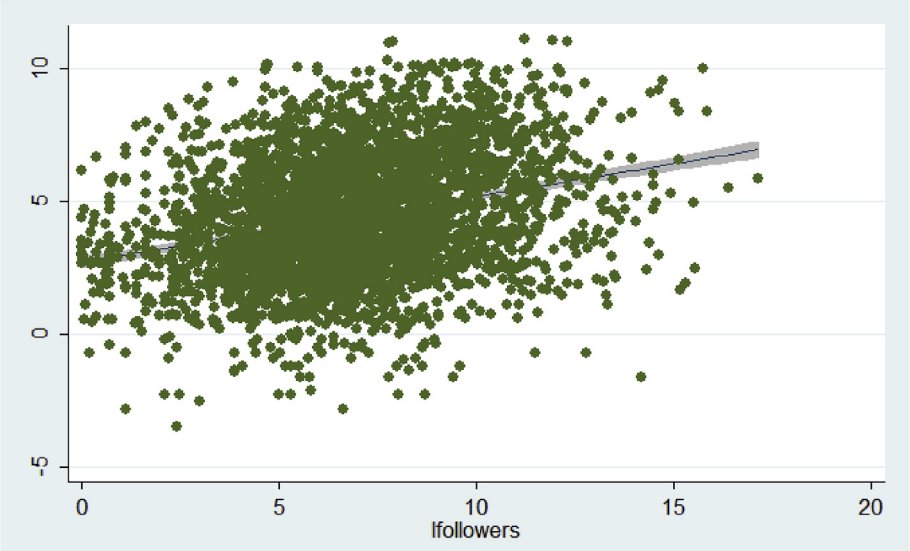

Fig. 2. FDI versus tweets.

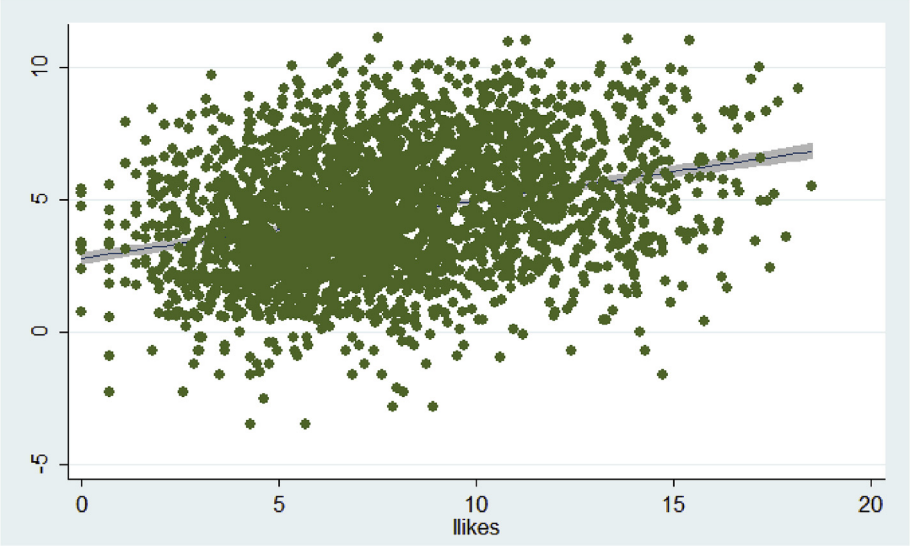

Fig. 3. FDI versus likes (Facebook).

Table 3 shows the descriptive statistics and correlation matrix for the data. We observe that most of the companies in the sample are B2B (only 26% are exclusively B2B). Production firms constitute 59% of the sample; science firms 7% and the rest (34%) are supplier-oriented firms. Most of the headquarters are from high-income OECD (Organization for Economic Co-operation and Development) countries (86%).

The correlation matrix confirms our initial assumptions of a strong serial correlation between the variables of interest and explicatory variables. Furthermore, the relatively low correlations between independent variables suggest that our chosen variables are free from collinearity.

The mean social media activity is relatively high with a high variance. The skewness of FDI-related data is a challenge for empirical analysis because average FDI estimates would cause bias in coefficient estimates (Paniagua et al., 2015). An inspection of data concentration in each quantile confirms this extent. Fig. 3 reveals that 90% of the FDI expenditure is concentrated in the upper quantiles, thereby justifying a quantile regression analysis.

4. Method

The baseline specification to study the empirical relationship between FDI and OSNs is fixed-effect panel:

$$\ln\left(FDI_{fsct}\right) = \beta_1 + \beta_2 \ln\left(TW_{fct}\right) + \beta_3 \ln\left(FB_{fct}\right) + FE_f + \varepsilon_{fsct}, \quad (2)$$

where FDI_{fsct} is the FDI for each firm f in sector s from country c in year t; TW_{fct} and FB_{fct} are the number of Twitter followers and Facebook likes, respectively; and FE_f firm fixed effects (one dummy per company). Lastly, ε_{fsct} is a stochastic error term. We use the same equation for the number of affiliates by substituting the left-hand-side variable for the affiliate count. We use a logarithmic scale to adequately represent the data and avoid heteroscedastic

perturbation in the estimation. Furthermore, log-linear models allow quantifying the relative or perceptual relationships, which are more descriptive than absolute variations.

The estimated coefficients of equation (2) give elasticity or the relative response of FDI to a relative change in OSN activity. We add one (+1) to all variables to include firms that have not invested in year t or show no social media activity. In this way, we include >2000 companies to the sample, which had no social media or investment activity. Thus, the estimate of the intercept β_1 reveals the average effect of not using SM.

It is worth noting the relevance of the fixed-effect term in equation (2). These dummies capture all constant unobserved firm's characteristics (e.g., firm size or productivity). However, a firm's FDI might respond to shocks in its home country or industry, that is, an increase in domestic demand or sector-wide productivity gains such as technological innovations. Consequently, country- or industry-level trends may be correlated with the error term. To explain unobservable country or sector characteristics, we introduce time-varying country and sector fixed-effect terms in the baseline equation:

$$\ln\left(FDI_{fsct}\right) = \beta_1 + \beta_2 \ln\left(TW_{fct}\right) + \beta_3 \ln\left(FB_{fct}\right) + FE_f + FE_{ct} + FE_{st} + \varepsilon_{fsct}. \quad (3)$$

Through the interaction of year dummies with country and sector dummies, we obtain these fixed effects, which isolate the effect of the variables of interest from any unobserved dynamic characteristics at the country or sector level. In total, we use 571 control variables (for 87 countries, 40 sectors, and 6 years). Thus, our equation is fully identified and does not require any additional variables at the country or sector level.

To measure the moderating effects of our conceptual framework, we introduce a set of interacts to capture how a firm's, industry, and institutional characteristics moderate the effect of OSNs on FDI. The interaction between OSNs and a B2C or B2B dummy captures the effect of our second hypothesis related to firm typology. We measure our third hypothesis with the type of network typologies (according to Pavitt's (1984) taxonomy). Our fourth hypothesis studies the effect of institutional quality as a push factor, which we measure with home-country OECD membership. Thus, the equation to estimate is:

$$\ln\left(FDI_{fsct}\right) = \beta_1 + \beta_2 \ln\left(SM_{fct}\right) + \beta_3 \ln\left(SM_{fct}\right)*B2C_f + \beta_4 \ln\left(SM_{fct}\right)*PRO_s + \beta_5 \ln\left(SM_{fct}\right)*SCI_s + \beta_5 \ln\left(SM_{fct}\right)*OECD_c + FE_f + FE_{ct} + FE_{st} + \varepsilon_{fsct}, \quad (4)$$

where SM is the total sum of followers on Facebook and Twitter, $SM_{fct} = TW_{fct}+FB_{fct}$. $B2C_f$ is a dummy which takes the value of "1" if company f is a B2C firm and "0" otherwise. PRO_s is a dummy that takes the value of "1" if the firm belongs to production sector and "0" otherwise. SCI_s is a dummy that takes the value of "1" if the firm belongs to science sector and "0" otherwise. $OECD_c$ is a dummy that takes the value of "1" if the firm's headquarters are located in a high-income OECD country. The approach consists of a stepwise introduction of these variables to gradually capture individual and collective effects.

A potential empirical bias derives from the dominance of a few *happy* companies, which account for most of the world's FDI (Kleinert, Martin, & Toubal, 2015; Mayer & Ottaviano, 2008). In addition, the distribution of FDI is highly skewed, and the mean estimates of the coefficients are potentially biased. Therefore, our baseline equation (2) is misspecified because of firm heterogeneity (Helpman, Melitz, & Yeaple, 2004; Nocke & Yeaple, 2007). Firms that cross borders differ from one another, although they all have

Table 1
List of countries.

Argentina, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belgium, Bermuda, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Kuwait, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mexico, Morocco, the Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Singapore, Slovakia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Togo, Turkey, United Arab Emirates, UK, Ukraine, United States, Vietnam

Table 2
List of industries.

Aerospace, Alternative Energy, Automotive, Automotive Components, Beverages, Biotechnology, Building, Business Machines, Business Services, Ceramics, Chemicals, Coal, Oil, Communications, Consumer Electronics, Consumer Products, Electronic Components, Engines & Turbines, Financial Services, Food & Tobacco, Health care, Hotels & Tourism, Industrial M., Leisure & Entertainment, Medical Devices, Metals, Minerals, Nonautomotive Parts, Paper, Print, Pharmaceutics, Plastics, Real Estate, Rubber, Semiconductors, Software, Space & Defense, Textiles, Transportation, Warehousing, Warehousing (Exel), Wood Products.

Table 3
Summary Statistics and correlation matrix.

	Mean	Sd	Min	Max	FDI	Affiliates	Facebook	Twitter	Social media	B2C	Production	Science
FDI	49.85	415.66	0	34,000	1							
Affiliates	0.604	2.26	0	66	0.435***	1						
Facebook	143,867.2	1,784,816	0	1.08e+08	0.0342***	0.0832***	1					
Twitter	20,548.8	330,930	0	2.81e+07	0.0207***	0.0715***	0.434***	1				
Social Media	164,416	1,951,432	10	1.21e+08	0.0348***	0.0882***	0.988***	0.567***	1			
B2C	0.255	0.43	0	1	0.0207***	0.0107*	0.00366	0.0163**	0.00611	1		
Production	0.587	0.49	0	1	0.00834	−0.00058	0.0128*	0.0204***	0.0152**	0.240***	1	
Science	0.066	0.25	0	1	0.0118*	−0.00300	−0.00994	−0.00207	−0.00944	0.00682	0.00616	1
OECD	0.854	0.35	0	1	−0.00331	0.0393***	0.0225***	0.0189***	0.0238***	−0.021***	0.0162**	−0.004

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

high productivity. For example, less productive firms serve domestic markets, highly productive firms engage in FDI, and the rest export. Quantile regression eliminates potential firm heterogeneity in addition to endogeneity bias in FDI estimates (Paniagua et al., 2015). Therefore, the strategy ends by implementing Paniagua et al.'s (2015) two-step quantile regression technique for the FDI gravity equation on the firm-level FDI equation (4).

5. Results and discussion

Results in Table 4 indicate that our model performed well in explaining >50% of the variation of FDI capital expenditure. The baseline results in column 1 demonstrate that all estimated coefficients corresponding to the number of followers and likes were positive and significant at the 1% level, thus confirming the main hypothesis and subhypotheses.

The estimation results suggest that companies with a marginal increase (1%) in Facebook and Twitter followers show 0.04% and 0.15% more FDI, respectively. This result means that, other things considered, companies with similar (fixed) characteristics but with double Facebook followers show 4% higher investment volumes. Similar companies with double Twitter followers invest 15% more capital abroad.

The constant intercept in column one (−0.108) reveals that companies with no Facebook or Twitter activity invest approximately 11% less than companies with active social media accounts. This figure shows that companies that stay away from social media tend to invest lower volumes of FDI.

Column 2 introduces time-varying sector and country fixed effects. Sectorial and country differences explain, to some extent, the effect of social media on FDI — as columns 2–4 introduce country-fixed and sector-fixed effects, and the intercept has no relevant interpretation other than for a particular country (Austria) and sector (financial services). The Facebook effect is nonsignificant in this specification. Hence, country characteristics explain the effect of Facebook on FDI. Therefore, Facebook appears to connect people with common country or sector linkages. However, the effect of Twitter remains positive and significant to the 5% level. Consequently, Twitter's effect outstands any local or industry factor. These results are in line with Paniagua and Sapena (2014a), who showed that Twitter has a greater effect than Facebook on firm performance.

Column 3 reports the results for the moderation effect of B2C companies. We observe that the company's activity moderates the effect of OSNs on FDI. The effect of social media on FDI is 3.9% higher on B2C than on B2B firms. Thus, the capabilities enhanced by social media (e.g., customer reach or reputation) have a higher effect on B2C. This result highlights the relevance of the knowledge transfer capability in the OSN–FDI link. Internal capabilities associated with B2B firms have a lower moderating effect on OSN's impact on FDI.

Column 4 reports the results introducing the moderating role of the type of sector networks. This specification helps underpin more closely the effect of social media on FDI. The effect concentrates in two types of firms: B2C or firms in the science sector. The latter refers to firms that promote open innovation and collaborate with external networks (for example, with universities or research institutes). Precisely in knowledge-based firms, OSNs have a greater impact on their foreign activity.

Column 5 introduces the interaction between OSN activity and institutional quality measured as OECD membership. Contrary to expectation, OSN has no differentiating effect on a high-income country with high-institutional quality. Therefore, social media serves as a global effect that partially minimizes institutional distance.

Table 4
Results (FDI).

	(1)	(2)	(3)	(4)	(5)
$\ln(FB_{fct})$	0.0418***	−0.00181			
	(0.015)	(0.016)			
$\ln(TW_{fct})$	0.145***	0.0376**			
	(0.014)	(0.018)			
$\ln(SM_{fct})$			0.0363**	0.0143	0.0428
			(0.018)	(0.021)	(0.035)
$\ln(SM_{fct})*B2C_f$			0.0387**	0.0364**	0.0368**
			(0.016)	(0.016)	(0.016)
$\ln(SM_{fct})*PRO_s$				0.0249	0.0249
				(0.016)	(0.016)
$\ln(SM_{fct})*SCI_s$				0.147**	0.145**
				(0.071)	(0.071)
$\ln(SM_{fct})*OECD_c$					−0.0386
					(0.038)
Constant	−0.108**	0.434***	0.319***	0.305***	0.332***
	(0.042)	(0.069)	(0.085)	(0.086)	(0.090)
Observations	36,504	36,504	36,504	36,504	36,504
Firm FE	Yes	Yes	Yes	Yes	Yes
Country*year FE	No	Yes	Yes	Yes	Yes
Sector*year FE	No	Yes	Yes	Yes	Yes
R^2	0.14	0.57	0.58	0.58	0.58

Standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Table 5 contains the quantile regression results with an estimate of each coefficient on the 0.1, 0.25, 0.50, 0.75, and 0.90 percentiles (which corresponds to investments lower than 3, 8.6, 32.8, 142.56, 544.23, and 1116.6 million USD). We can obtain several interesting lessons from these results. First, the effect of social media is not homogeneous across the different levels of FDI. Social media has even a lower effect for lower levels of FDI.

Second, the effect of OSNs is higher on B2C but only for levels below the 90th percentile (<544 million USD investments). For higher levels of FDI, the effect is similar, highlighting the relevance of OSNs also for experienced B2B firms. Third, the effect of SM on production firms is positive (and higher than supplier oriented) but only levels below the 90th percentile (<544 million USD investments). As the FDI data are skewed and most of the production firms are in the higher percentiles, previous mean estimates were not capturing this effect.

The effect of OSNs is lower in very small science firms. This result highlights the relevance of a critical mass to be able to profit from an external network. Paniagua and Sapena (2014a) related critical mass to the maturity of the OSN market; markets with deeper OSN penetration show either no critical values or higher critical values than those of less mature markets.

Lastly, we appreciate a push effect of better institutional quality for levels below the 90th percentile (<544 million USD investments). This result reveals that institutional settings are relevant for less experienced and small firms. Firms above the 90th percentile did not require institutional pushes and rely mainly on firm and industry resources.

Overall, the quantile regression results reveal an interesting picture and several implications for management. The effect of OSNs on international activity is positive. However, it is more interesting for big-science firms or B2C firms. The effect is not as relevant for big production or small supplier-oriented firms.

Fig. 4 depicts the value of the coefficients and its standard errors across quantiles for FDI measured in capital investment.

Tables 6 and 7 repeat the same exercise for the number of affiliates. Therefore, the interpretation of the coefficients focuses on the creation of new foreign links rather than on their volume.

The pattern shown in Table 6 is very similar; OSN has a positive

Table 5
Quantile regression (FDI).

	(1)	(2)	(3)	(4)	(5)	(6)
	Q (0.10)	Q (0.25)	Q (0.50)	Q (0.75)	Q (0.90)	Q (0.95)
Average FDI:	3	8.6	32.8	142.57	544.23	1116.6
$\ln(SM_{fct})$	0.0187***	0.0562***	0.0671***	0.0858***	0.172***	0.156***
	(0.005)	(0.002)	(0.002)	(0.003)	(0.011)	(0.016)
$\ln(SM_{fct})^{*}B2C_f$	0.00549*	0.00149	0.00381***	0.00313*	0.00729	0.00839
	(0.003)	(0.001)	(0.001)	(0.002)	(0.007)	(0.009)
$\ln(SM_{fct})^{*}PRO_s$	0.00282	0.00251*	0.00692***	0.00569***	0.000191	−0.0135
	(0.003)	(0.001)	(0.001)	(0.002)	(0.006)	(0.009)
$\ln(SM_{fct})^{*}SCI_s$	−0.018***	−0.00014	0.00644***	0.00805**	0.0648***	0.0917***
	(0.006)	(0.002)	(0.002)	(0.003)	(0.012)	(0.017)
$\ln(SM_{fct})^{*}OECD_c$	0.0201***	0.0246***	0.0182***	0.0240***	0.0161*	−0.0119
	(0.005)	(0.002)	(0.002)	(0.003)	(0.010)	(0.014)
Constant	−0.447***	−0.184***	0.0620***	0.352***	0.804***	2.066***
	(0.020)	(0.008)	(0.006)	(0.012)	(0.041)	(0.058)
Observations	36,504	36,504	36,504	36,504	36,504	36,504

Standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

and significant effect on the number of projects (or extensive margin). As the intercept in column 1 is positive and significant, firms with no OSN activity have fewer foreign projects. Country- and industry-fixed effects capture the effect of Facebook followers (in column 2). However, we appreciate some notable differences between the effect of OSNs on FDI's margins (volumes vs. affiliates) in columns 3 and 4 of Table 6.

OSNs have a similar effect on the number of foreign projects of B2C and B2C firms. This result means that OSNs only increase the volume of B2C foreign plants but have a similar effect on the number of foreign endeavors. Following our theoretical discussion, B2B capabilities (related to internal tools such as social CRM) are as important as B2C capabilities (knowledge transfer) when creating a new FDI link, which may relate to the type of projects that B2C open. For example, retail firms would need more shop space in countries with more followers, but the effect of OSNs on the decision to open a retail shop or chemistry laboratory is similar.

Column 4 shows that OSNs aid supplier-oriented firms to create new foreign projects (rather than to increase their volume). We observe no substantial difference with science firms (the effect on

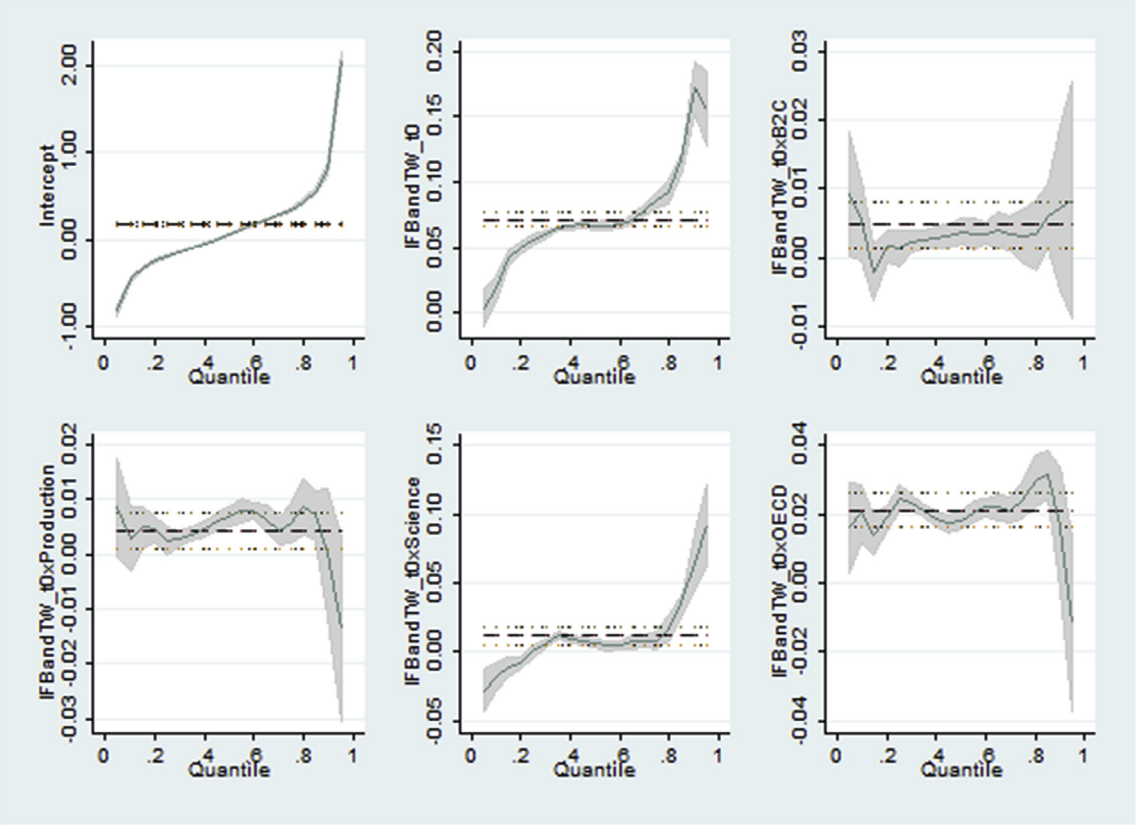

Fig. 4. Quantile analysis for FDI.

Table 6
Results (affiliates).

	(1)	(2)	(3)	(4)	(5)
$\ln(FB_{fct})$	0.0214***	0.00634			
	(0.004)	(0.005)			
$\ln(TW_{fct})$	0.0475***	0.0158***			
	(0.004)	(0.005)			
$\ln(SM_{fct})$			0.0217***	0.0143**	0.0230**
			(0.005)	(0.006)	(0.010)
$\ln(SM_{fct})^{*}B2C_f$			0.00522	0.00425	0.00437
			(0.005)	(0.005)	(0.005)
$\ln(SM_{fct})^{*}PRO_s$				0.0100**	0.0100**
				(0.005)	(0.005)
$\ln(SM_{fct})^{*}SCI_s$				0.0320	0.0316
				(0.021)	(0.021)
$\ln(SM_{fct})^{*}OECD_c$					−0.0117
					(0.011)
Constant	−0.0835***	0.0867***	0.0527**	0.0498**	0.0581**
	(0.012)	(0.020)	(0.025)	(0.025)	(0.026)
Observations	36,504	36,504	36,504	36,504	36,504
Firm FE	Yes	Yes	Yes	Yes	Yes
Country*year FE	No	Yes	Yes	Yes	Yes
Sector*year FE	No	Yes	Yes	Yes	Yes
R^2	0.21	0.70	0.70	0.70	0.70

Standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

science firms is still positive and significant, but indistinguishable from supplier firms). However, OSNs have a higher effect on production firms, meaning that production OSNs have a greater effect on the decision of opening a foreign subsidiary than for supplier or science firms. Column 5 confirms that, on average, institutional push factors have no significant moderating effect on the number of affiliates.

The lessons from the quantile regression of the number of affiliates in Table 7 are very similar to those of the FDI volumes. OSN's effect on the extensive margin of supplier-oriented and B2B firms is positive and significant only for firms above the first quartile (firms that open less than three FDI projects per year). We observe that OSNs have a greater effect on B2C but only around the median. The nonsignificant effect from Table 5 was capturing firms on the higher and lower levels of the extensive margin. OSNs have a homogeneous positive effect on production-oriented firms with fewer than 22 FDI projects per year (below the 90th percentile). Conversely, OSNs have a positive effect on large science-oriented firms.

Institutional quality has a significant moderating effect on the creation of FDI affiliates, but only for firms below the 90th percentile. Again, home-country institutions are not a moderating factor for experienced companies with multiple affiliates. However, smaller companies would benefit from an increase in institutional quality, which would allow them to experience all the advantages of OSNs.

Fig. 5 depicts the value of the coefficients and their standard errors across quantiles for FDI measured in capital investment.

6. Conclusions

This research offers several contributions to the FDI and social media literature. This article presents a novel and detailed examination of the relationship between OSN sites (e.g., Facebook and Twitter) and FDI. Multinationals are active users of social media: FDI and online networking converge in international corporations. This research extends FDI theory by adding recent developments in the MNE and OSN literature to explain how social media interacts with FDI. Another contribution refers to empirical evidence in line with the mobile-capability-based theory of the MNE (Nocke & Yeaple, 2007; Teece, 2014).

We quantify the relationships of the model to study the difference in influence between Facebook and Twitter on capital investment, the number of affiliates of >4500 multinational firms. This study responds to four research questions:

First, it unravels the business dynamics through which OSNs affect FDI. The study highlights the relevance of mobile capabilities such as knowledge transfer (Foss & Pedersen, 2004) and reputation. Firms (especially B2C) could benefit from the lessons learned in this study for future international expansions.

Second, it identifies the type of firms and internationalization capabilities enriched by social media. Recalling the empirical results, the effect of social media on FDI is on average 3.9% higher on B2C than on B2B firms. In addition, quantile regressions show that OSNs have a greater effect on firms with high-international activity. This result suggests that firms need to invest and develop mobile and customer capabilities in order to fully exploit the benefits of social media for FDI.

Third, the study highlights sectoral differences. It is precisely in the knowledge-based sector, where OSNs have a greater impact on foreign business activity. Therefore, by enhancing the knowledge transfer capabilities with social media, international firms may boost their foreign endeavors. In addition, firms may exploit

Table 7
Quantile regression Affiliates.

	(1)	(2)	(3)	(4)	(5)	(6)
	Q (0.10)	Q (0.25)	Q (0.50)	Q (0.75)	Q (0.90)	Q (0.95)
Affiliates:	1	2	3	6	10	22
$\ln(SM_{fct})$	−0.0385***	0.0230***	0.0208***	0.0254***	0.148***	0.109***
	(0.008)	(0.005)	(0.000)	(0.001)	(0.014)	(0.014)
$\ln(SM_{fct})^{*}B2C_f$	−0.00412	−0.00159	0.000595***	0.000765	0.00421	−0.00185
	(0.003)	(0.002)	(0.000)	(0.001)	(0.004)	(0.006)
$\ln(SM_{fct})^{*}PRO_s$	0.00920***	0.00662***	0.00224***	0.00262***	−0.00543	−0.0129
	(0.004)	(0.002)	(0.000)	(0.000)	(0.005)	(0.016)
$\ln(SM_{fct})^{*}SCI_s$	−0.0428***	−0.0258***	−0.00107	0.000793	0.0540***	0.0957***
	(0.007)	(0.005)	(0.001)	(0.001)	(0.016)	(0.024)
$\ln(SM_{fct})^{*}OECD_c$	0.0169**	−0.00398	0.00989***	0.0100***	0.0105	−0.0259
	(0.007)	(0.004)	(0.000)	(0.001)	(0.012)	(0.015)
Constant	−0.0480***	0.291***	0.535***	0.575***	0.896***	2.370***
	(0.016)	(0.008)	(0.001)	(0.000)	(0.059)	(0.059)
Observations	36,504	36,504	36,504	36,504	36,504	36,504

Standard errors in parentheses.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

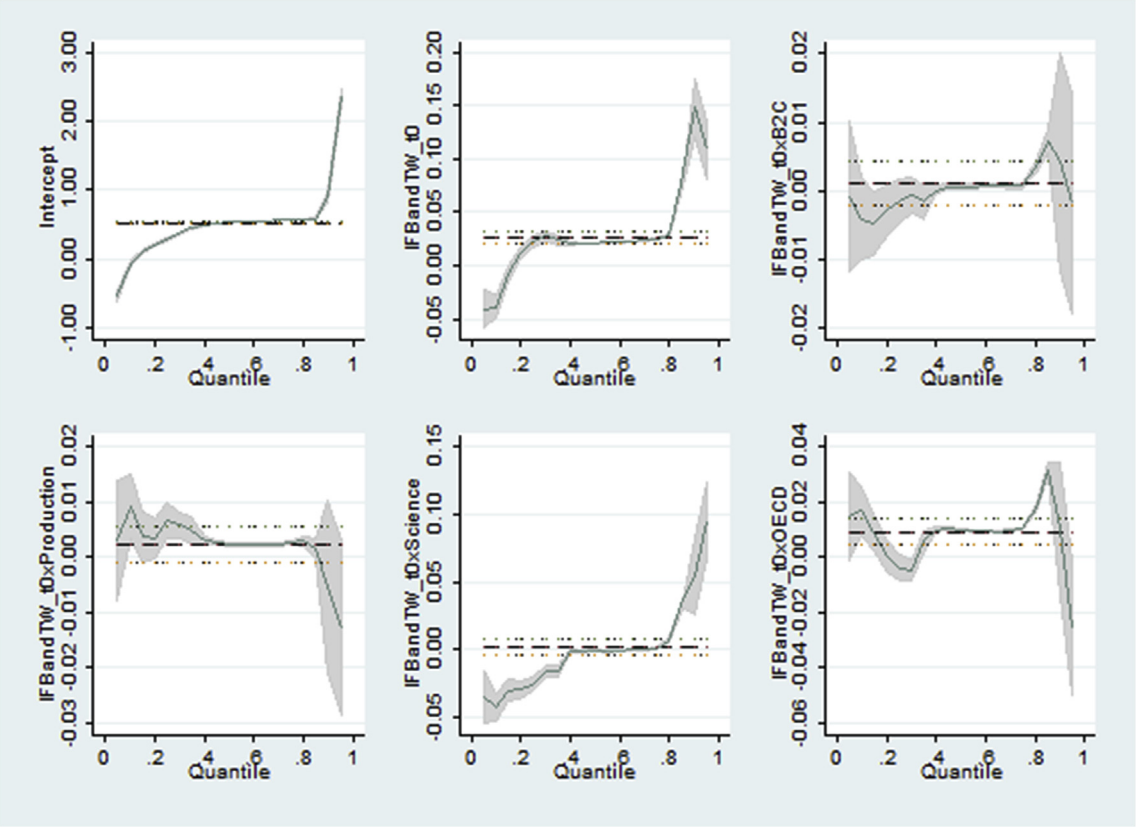

Fig. 5. Quantile analysis for affiliates.

corporate social networking to increase their abilities to fully benefit from social media in an international environment.

Finally, the research underlines the relevant role of the institutional setting of the firm's home country. Institutions play a moderating role in OSN's effect on FDI, especially for those enterprises less experienced in an international context.

This research offers interesting findings for policymakers. Plans targeted at the digital socialization of SME would increase the internationalization of small firms. Governments are beginning to understand the power of social media to communicate with multinational corporations. Hashtags such as *#SpainLovesTesla* are a starting point in the social media calling for FDI. Policymakers can also refer this study to relate social media activity to measure the FDI attractiveness of their country. By doing so, governments, as well as private enterprises, can put strategies into practice to boost FDI in their country or region.

In this study, practitioners may find insights to develop international strategies using publicly available information on social media. Practitioners can thus develop techniques that permit faster and greater firm internationalization through observation and analysis of not only customers but also friends and followers on Facebook and Twitter. Furthermore, the calculations of the quantile analysis in this study allow managers to calibrate the amount of resources needed to allocate in the joint social and international strategy.

Social media managers can find some practical tips to exploit OSNs for foreign investment. In line with previous studies, which analyzed the impact of OSNs on business performance (Paniagua & Sapena, 2014a), our empirical results suggest that Twitter is a more resilient channel for FDI than Facebook. Therefore, microblogging platforms based on affinities (with strong political or professional ties) seem to offer more appropriate instruments than do multipurpose sites based on acquaintances (with strong geographical and cultural ties) for multinational companies.

As a closing remark, this study has some limitations. Because of lack of availability of data, we could only test a particular type of FDI. Further research is needed to explore the effect of OSNs on other foreign entry modes, particularly mergers and acquisitions. In addition, some questions regarding the interplay between FDI and OSNs remain open. For example, it would be interesting to detangle the specific effect related to reputation or how OSNs influence geographic location patterns of affiliates.

Furthermore, future studies could explore further interesting effects. Foreign jobs are the third leg of the internationalization tripod along with capital expenditure and new affiliates. Foreign employment is a crucial element for local policymakers in a crisis context (Paniagua & Sapena, 2015). More research is needed to study the relationship between social media and foreign employment.

Our quantile results show that social media has greater influence for higher levels of FDI (i.e., larger multinational companies). Future research could study whether results for smaller businesses and international entrepreneurs reflect the findings in this research. Applications and extensions of this study on particular activity sectors or countries are certainly encouraged.

Social media is a very rich resource with many different cofounding activities. Firms are already interacting with the online crowd (Prpić, Shukla, Kietzmann, & McCarthy, 2015). It would be certainly interesting to explore the role of crowdsourcing. FDI is particularly affected by credit constraints (Gil-Pareja, Llorca Vivero, & Paniagua, 2013); therefore, crowdfunding would be an interesting element to explore as a source of international finance.

The relationship between social media and professional networking sites is underexplored, as is the use of internal digital tools. Corporate-generated content or even employee-generated content in social media might prove relevant for international business. Future research may also extend our work to corporate networking sites.

Acknowledgments

We thank the editor Sabina Siebert and three anonymous referees for helpful comments. Jordi Paniagua gratefully acknowledges the financial support from MINECO (project ECO2015-68057-R) and from the Catholic University of Valencia (PRUCV/2015/652).

References

Acemoglu, D., & Johnson, S. (2005). Unbundling institutions. *Journal of Political Economy, 113*, 949–995.
Antràs, P., & Helpman, E. (2004). Global sourcing. *Journal of Political Economy, 112*(3), 552–580.
Barney, J. (1991). Firm Resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120.
Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management, 27*(6), 643–650.
Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing, 29*(5), 585–609.
Beugelsdijk, S., McCann, P., & Mudambi, R. (2010). Introduction: Place, space and organization—economic geography and the multinational enterprise. *Journal of Economic Geography, 10*(4), 485–493.
Björkman, I., Barner-Rasmussen, W., & Li, L. (2004). Managing knowledge transfer in MNCs: The impact of headquarters control mechanisms. *Journal of International Business Studies, 35*, 443–455.
Brammer, S. J., & Pavelin, S. (2006). Corporate reputation and social performance: The importance of fit. *Journal of Management Studies, 43*(3), 435–455.
Brouthers, K. D., & Dikova, D. (2010). Acquisitions and real options: The greenfield alternative. *Journal of Management Studies, 47*(6), 1048–1071.
Cantwell, J. (2014). Revisiting international business theory: A capabilities-based theory of the MNE. *Journal of International Business Studies, 45*(1), 1–7.
Chandra, Y., & Coviello, N. (2010). Broadening the concept of international entrepreneurship: 'Consumers as international entrepreneurs'. *Journal of World Business, 45*(3), 228–236.
Chen, T. J. (2003). Network resources for internationalization: The case of Taiwan's electronics firms. *Journal of Management Studies, 40*(5), 1107–1130.
Chen, R. (2008). The cost of doing business abroad in emerging markets and the role of MNC parent companies. *Multinational Business Review, 16*(3), 23–40.
Choi, H., & Varian, H. (2012). Predicting the present with google trends. *Economic Record, 88*(s1), 2–9.
Chung, W., & Alcácer, J. (2002). Knowledge seeking and location choice of foreign direct investment in the United States. *Management Science, 48*(12), 1534–1554.
Ciravegna, L., Majano, S. B., & Zhan, G. (2014). The inception of internationalization of small and medium enterprises: The role of activeness and networks. *Journal of Business Research, 67*(6), 1081–1089.
Cumming, D. J., & Johan, S. (2016). Crowdfunding and entrepreneurial internationalization. In N. Dai, & D. Siegel (Eds.), *Entrepreneurial Finance: Managerial and policy implications*. The World Scientific Publishers (Chapter 5), (in press).
Day, G. S. (1994). The capabilities of market-driven organizations. *Journal of Marketing, 58*(4), 37.
DesAutels, P. (2011). UGIS: Understanding the nature of user-generated information systems. *Business Horizons, 54*(3), 185–192.
Du, J., Xu, H., & Huang, X. (2014). Box office prediction based on microblog. *Expert Systems with Applications, 41*(4), 1680–1689.
Elango, B., & Pattnaik, C. (2007). Building capabilities for international operations through networks: A study of indian firms. *Journal of international Business Studies, 38*(4), 541–555.
Ellis, P. D. (2011). Social ties and international entrepreneurship: Opportunities and constraints affecting firm internationalization. *Journal of International Business Studies, 42*(1), 99–127.
Enders, A., Hungenberg, H., Denker, H. P., & Mauch, S. (2008). The long tail of social networking: Revenue models of social networking sites. *European Management Journal, 26*(3), 199–211.
FDIMarkets. (2013). *FDI markets - The financial times Ltd*. Retrieved from http://www.fdimarkets.com.
Fieseler, C., Fleck, M., & Meckel, M. (2010). Corporate social responsibility in the blogosphere. *Journal of Business Ethics, 91*(4), 599–614.
Filipescu, D. A., Prashantham, S., Rialp, A., & Rialp, J. (2013). Technological innovation and exports: Unpacking their reciprocal causality. *Journal of International Marketing, 21*(1), 23–38.
Fletcher, M., Harris, S., & Richey, R. G., Jr. (2013). Internationalization knowledge: What, why, where, and when? *Journal of International Marketing, 21*(3), 47–71.
Forstenlechner, I., & Mellahi, K. (2011). Gaining legitimacy through hiring local workforce at a premium: The case of MNEs in the United Arab Emirates. *Journal of World Business, 46*(4), 455–461.
Foss, N. J., & Pedersen, T. (2004). Organizing knowledge processes in the multinational corporation: An introduction. *Journal of International Business Studies, 35*, 340–349.
Gabaix, X. (2011). The Granular origins of aggregate fluctuations. *Econometrica, 79*(3), 733–772.
Gifford, B., Kestler, A., & Anand, S. (2010). Building local legitimacy into corporate social responsibility: Gold mining firms in developing nations. *Journal of World Business, 45*(3), 304–311.
Gil-Pareja, S., Llorca Vivero, R., & Paniagua, J. (2013). The effect of the great recession on foreign direct investment: Global empirical evidence with a gravity approach. *Applied Economics Letters, 20*, 1244–1248.
di Giovanni, J., Levchenko, A. A., & Méjean, I. (2014). Firms, destinations, and aggregate fluctuations. *Econometrica, 82*(4), 1303–1340.
Goerzen, A., Asmussen, C. G., & Nielsen, B. B. (2013). Global cities and multinational enterprise location strategy. *Journal of International Business Studies, 44*(5), 427–450.
Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 481–510.
Greenaway, D., & Kneller, R. (2007). Firm heterogeneity, exporting and foreign direct investment. *The Economic Journal, 117*(517), 134–161.
Griffith, D. A., Kiessling, T., & Dabic, M. (2012). Aligning strategic orientation with local market conditions: Implications for subsidiary knowledge management. *International Marketing Review, 29*(4), 379–402.
Helpman, E. (1984). A simple theory of international trade with multinational corporations. *The Journal of Political Economy, 92*(3), 51–471.
Helpman, E., Melitz, M., & Rubinstein, Y. (2008). Estimating trade flows: Trading partners and trading volumes. *Quarterly Journal of Economics, 123*(2), 441–487.
Helpman, E., Melitz, M., & Yeaple, S. R. (2004). Export versus FDI with heterogeneous firms. *American Economic Review, 94*(1), 300–316.
Kalinic, I., Sarasvathy, S. D., & Forza, C. (2014). "Expect the unexpected": Implications of effectual logic on the internationalization process. *International Business Review, 23*(3), 635–647.
Kamoche, K. (1996). Strategic human resource management within a resource-capability view of the firm. *Journal of Management Studies, 33*(2), 213–233.
Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! the challenges and opportunities of Social Media. *Business Horizons, 53*(1), 59–68.
Kärkkäinen, H., Jussila, J., & Multasuo, J. (2012, October). Can crowdsourcing really be used in B2B innovation?. In *Proceeding of the 16th international academic MindTrek conference* (pp. 134–141). ACM.
Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons, 54*(3), 241–251.
Kiss, A. N., & Danis, W. M. (2008). Country institutional context, social networks, and new venture internationalization speed. *European Management Journal, 26*(6), 388–399.
Kiss, A. N., & Danis, W. M. (2010). Social networks and speed of new venture internationalization during institutional transition: A conceptual model. *Journal of International Entrepreneurship, 8*(3), 273–287.
Kleinert, J., Martin, J., & Toubal, F. (2015). The few leading the Many: Foreign affiliates and business cycle comovement. *American Economic Journal: Macroeconomics, 7*(4), 134–159.
Kolstad, I., & Wiig, A. (2012). What determines Chinese outward FDI? *Journal of World Business, 47*(1), 26–34.
Korzynski, P. (2013). Online social networks and leadership: Implications of a new online working environment for leadership. *International Journal of Manpower, 34*(8), 975–994.
Korzynski, P., & Paniagua, J. (2016). Score a tweet and post a goal: Social media recipes for sports stars. *Business Horizons, 59*(2), 185–192.
Kostova, T. (1999). Transnational transfer of strategic organizational practices: A contextual perspective. *Academy of Management Review, 24*(2), 308–324.
Kostova, T., & Roth, K. (2002). Adoption of an organisational practice by subsidiaries of multinational corporations: Institutional and relational effects. *Academy of Management Journal, 45*(1), 215–233.
Kostova, T., & Zaheer, S. (1999). Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management Review, 24*(1), 64–81.
Leeflang, P. S., Verhoef, P. C., Dahlström, P., & Freundt, T. (2014). Challenges and solutions for marketing in a digital era. *European Management Journal, 32*(1), 1–12.
Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: A study on technology-based ventures. *Strategic Management Journal, 22*(6–7), 615–640.
Leenders, R. T., & Gabbay, S. M. (1999). CSC: An agenda for the future. In *Corporate social capital and liability* (pp. 483–494). US: Springer.
Llano, C., Minondo, A., & Requena, F. (2011). Is the border effect an artifact of geographical aggregation? *The World Economy, 34*(10), 1771–1787.
Madsen, T. K., & Servais, P. (1997). The internationalization of born globals: An evolutionary process? *International Business Review, 6*(6), 561–583.
Makino, S., Isobe, T., & Chan, C. M. (2004). Does country matter? *Strategic Management Journal, 25*(10), 1027–1043.
Maltby, T. (2012). Using social media to accelerate the internationalization of startups from inception. *Technology Innovation Management Review*, 22–26

(October 2012: Born Global).
Mandal, P. K. (2014). Employer brand: A new component of ownership specific advantage of eclectic paradigm. *International Journal of Innovative Research and Development, 3*(3), 155–157.
Manolova, T. S., Manev, I. M., & Gyoshev, B. S. (2010). In good company: The role of personal and inter-firm networks for new-venture internationalization in a transition economy. *Journal of World Business, 45*(3), 257–265.
Mayer, T., & Ottaviano, G. (2008). The happy few: The internationalisation of European firms. *Intereconomics, 43*(3), 135–148.
McCann, P., & Mudambi, R. (2005). Analytical differences in the economics of geography: The case of the multinational firm. *Environment and Planning A, 37*(10), 1857.
McLellan, L. (2014, January 9). *Digital marketing budgets increase, reflecting focus on customer experience*. Retrieved from www.gartner.com.
Mezias, J. M. (2002). Identifying liabilities of foreignness and strategies to minimize their effects: The case of labor lawsuit judgments in the United States. *Strategic Management Journal, 23*(3), 229–244.
Morgan, J. (2015). *Three ways Sanofi pasteur encourages collaboration*. Forbes. Retrieved from http://www.forbes.com/sites/jacobmorgan/2015/10/20/three-ways-sanofi-pasteur-encourages-collaboration/.
Munzel, A., & Kunz, W. H. (2013). *Sharing Experiences via Social Media as Integral Part of the Service Experience*. Available at SSRN 2307120.
Musteen, M., Francis, J., & Datta, D. K. (2010). The influence of international networks on internationalization speed and performance: A study of Czech SMEs. *Journal of World Business, 45*(3), 197–205.
Nocke, V., & Yeaple, S. R. (2007). Cross-border mergers and acquisitions vs. greenfield foreign direct investment: The role of firm heterogeneity. *Journal of International Economics, 72*(2), 336–365.
Ojala, A. (2009). Internationalization of knowledge-intensive SMEs: The role of network relationships in the entry to a psychically distant market. *International Business Review, 18*(1), 50–59.
Paniagua, J. (2015). A gravity model for foreign re-investment. *Economics Bulletin, 35*(1), 627–632.
Paniagua, J., Figueiredo, E., & Sapena, J. (2015). Quantile regression for the FDI gravity equation. *Journal of Business Research, 68*(7), 1512–1518.
Paniagua, J., & Sapena, J. (2013). The ethics of foreign knowledge brokers: A conceptual and empirical framework. *European Journal of International Management, 7*(3), 333–349.
Paniagua, J., & Sapena, J. (2014a). Business performance and social media: Love or hate? *Business Horizons, 57*(6), 719–728.
Paniagua, J., & Sapena, J. (2014b). Is FDI doing good? A golden rule for FDI ethics. *Journal of Business Research, 67*(5), 807–812.
Paniagua, J., & Sapena, J. (2015). Do credit costraints reduce foreign jobs? A note on foreign direct employment. *Applied Economics Letters, 22*(3), 195–198.
Pavitt, K. (1984). Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy, 13*(6), 343–373.
Pendergrast, M. (2000). *For God, country and Coca-Cola: The definitive history of the great American soft drink and the company that makes it*. New York: Basic Books.
Peng, M. W., Wang, D. Y., & Jiang, Y. (2008). An institution-based view of international business strategy: A focus on emerging economies. *Journal of International Business Studies, 39*, 920–936.
Perri, A., & 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, 23*(1), 63–75.
Perrigot, R., Basset, G., & Cliquet, G. (2011). Multi-channel communication: The case of subway attracting new franchisees in France. *International Journal of Retail & Distribution Management, 39*(6), 434–455.
Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal, 14*(3), 179–191.
Porter, M. E. (1981). The contributions of industrial organization to strategic management. *Academy of Management Review, 6*(4), 609–620.
Prpić, J., Shukla, P., Kietzmann, J. H., & McCarthy, I. (2015). How to work a crowd: Developing crowd capital through crowdsourcing. *Business Horizons, 58*(1), 77–85.
Quinton, S., & Wilson, D. (2016). Tensions and ties in social media networks: Towards a model of understanding business relationship development and business performance enhancement through the use of LinkedIn. *Industrial Marketing Management, 54*, 15–24.
Russell, S., & Brannan, M. J. (2016). "Getting the right people on the bus" recruitment, selection and integration for the branded organization. *European Management Journal, 34*(2), 114–124.
Sabate, F., Berbegal-Mirabent, J., Cañabate, A., & Lebherz, P. R. (2014). Factors influencing popularity of branded content in Facebook fan pages. *European Management Journal, 32*(6), 1001–1011.
Schultz, M., Mouritsen, J., & Gabrielsen, G. (2001). Sticky reputation: Analyzing a ranking system. *Corporate Reputation Review, 4*(1), 24–41.
Sigfusson, T., & Chetty, S. (2013). Building international entrepreneurial virtual networks in cyberspace. *Journal of World Business, 48*(2), 260–270.
Simula, H., & Vuori, M. (2012). Benefits and barriers of crowdsourcing in B2B firms: Generating ideas with internal and external crowds. *International Journal of Innovation Management, 16*(06), 124–143.
Teece, D. J. (2014). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of International Business Studies, 45*(1), 8–37.
Trainor, K. J., Andzulis, J., Rapp, A., & Agnihotri, R. (2014). Social media technology usage and customer relationship performance: A capabilities-based examination of social CRM. *Journal of Business Research, 6*(67), 1229–1236.
Venzin, M., Kumar, V., & Kleine, J. (2008). Internationalization of retail banks: A micro-level study of the multinationality-performance relationship. *Management International Review, 48*(4), 463–485.
Wang, W. Y., Pauleen, D. J., & Zhang, T. (2016). How social media applications affect B2B communication and improve business performance in SMEs. *Industrial Marketing Management, 54*, 4–14.
Weinberg, B. D., & Pehlivan, E. (2011). Social spending: Managing the social media mix. *Business Horizons, 54*(3), 275–282.
Wu, J., & Chen,, X. (2014). Home country institutional environments and foreign expansion of emerging market firms. *International Business Review, 23*(5), 862–872.
Xu, D., & Shenkar, O. (2002). Note: Institutional distance and the multinational enterprise. *Academy of Management review, 27*(4), 608–618.