

Foreign Investment Location Choices: Key Traditional IB Models and Unforeseen New Realities**ABSTRACT**

The mainstream literature has established several key models and boundary conditions for choice of foreign investment locations, based on theoretical assumptions on firm behavior in developed markets, which we tested in the context of emerging markets. Our empirical evidence from Sub-Saharan Africa suggest that mobile network operators' choice of investment locations may not fully comply with the propositions and findings of the previous studies. Contrary to the predictions of the literature, our study reveals that MNOs' investment location choices are mainly informed by institutional considerations such as colonial ties and level of control over corruption, as well as oligopolistic reaction and mutual avoidance. By divulging the tendency of firms to behave differently under varying contexts, against the norm, our study makes useful contributions to the literature on choice of foreign investment locations.

Keywords: Foreign investment location choices, multimarket competition, hi-tech industry, mobile network operators, emerging markets, Sub-Saharan Africa

INTRODUCTION

The International Business (IB) and Strategy literature has, over the decades, established numerous theoretical models and concepts – such as the Uppsala Model of internationalization (Johanson & Vahlne, 1977) and oligopolistic reaction (Knickerbocker, 1973; Ito & Rose, 2002) – which have been key for explaining how firms choose locations for their foreign direct investments (FDIs). These models, which were framed based on the hypothesized and observed behaviors of multinational enterprises (MNEs) in the mainly mature industries in developed market, also created certain theoretical assumptions and boundary conditions regarding how firms invest in foreign markets. Essentially, the boundary conditions were established with the notion that firms would behave in the same manner; irrespective of their industrial backgrounds and business or institutional environments - developed or emerging market.

Nonetheless, certain relatively new realities not perceived prior to the early studies have their inherent characteristics that determine the activities of firms and thus challenge the established norms regarding choice of foreign investment locations. The mobile telecommunications (telecoms) industry and emerging markets are among such new industrial and locational contexts where it would no longer be business as usual in terms of locating FDIs. Mobile is very strategic to both national security and economic development and growth, which explains the high barriers to entry and strict regulations placed on the activities of firms. The industry is further characterized by high dynamism, considering the rapid uptake of mobile services, as evident from the ever-increasing volumes of subscriptions since the inception of the industry in the 1980s. In the case of emerging markets, these are very fast-evolving, economically diverse, politically volatile, and environmentally challenging countries. The role of time and context in the evolution of IB and Strategy research has been emphasized (e.g., Swoboda, 2002; Poulis, Poulis, & Plakoyiannaki, 2013; Teagarden, Von Glinow, & Mellahi, 2018).

Thus, it would be not only erroneous but also misleading to assume that a mobile network operator¹ (MNO), which can easily be described as a high-technology (high-tech) firm, operating in the emerging markets of Africa, Asia, or South America, or Eastern Europe would behave in the manner as a firm in other industries such as automobile, airlines, chemical, banking, hotel or manufacturing in the developed markets of Europe, North America, or Japan. The underlying argument here is that firms are compelled to behave differently under the different industrial contexts and market/institutional environments they found themselves, which, again, stresses the role of context on firm behavior.

Against this backdrop, we investigate how far the boundary conditions of the traditional investment location theories can hold when pushed to the extreme, such as in the case of MNOs' choice of where to locate FDIs in in Sub-Saharan Africa² (SSA). We are interested in finding out what happens

¹ An MNO is a telecoms firm that owns and controls both radio spectrum licenses and the network infrastructure capable of delivering wireless voice and data communications to subscribed users.

² The SSA region comprises a total of 49 countries, 43 of which lie below the Sahara Desert on the African mainland, while six are island countries in both the Atlantic and Indian Oceans

to the theoretical models and their boundary conditions, beyond the edge of developed markets and the traditional industries, considering the investment choice locations of firms in certain new industrial and locational contexts not considered by the early theorists. We should note that both mobile telecoms and emerging markets are new realities that were non-existent as at the time the early theories were developed, implying that the two were not considered in both the underlying assumptions of the early FDI models and their boundary conditions.

This study is borne out of our belief that the investment location choices of MNOs in emerging markets offer a sound contextual basis for further understanding of the FDI behaviors of firms, and we expect new useful insights to be generated through our results and findings. We make two very important theoretical contributions to the International Business (IB) and Strategy literature: first, we contribute to the ongoing debate on the efficacy of the propositions of the extant FDI theory by incorporating the foreign investment location choices of MNOs in emerging markets. While, undoubtedly, the findings of the early studies in this bias, which were conducted on firms in the mature industries of developed markets, have guided present understanding of the investment location choices of firms, the emergence of certain relatively new realities – mobile telecoms and emerging markets – offers room to revisit the hypotheses and findings of those early studies and the models emanating through them. The inherent natures of the mobile telecoms industry and emerging markets are expected to have strong influence on the investment location decisions of MNOs, making the findings of our study very useful for extending current know-how.

Second, we integrate the very important business and locational contexts of mobile telecoms and emerging markets, which, to-date, have remained underutilized in empirical academic investigations, into the ongoing debate on the FDI location choices of firms. Particularly, as our findings reveal how MNOs choose investment locations in emerging market regions, we extend international strategy research on FDI location choices from the perspective of two contexts of two underutilized contexts. The use of SSA in

the study is particularly novel, considering that the region is presently underserved in academic research and, as such, presents a sound basis for challenging common knowledge and understanding.

Our study has some policy implications as well: it provides useful practical insights; which managers of MNOs and other high-tech firms may consider in their FDI location choice decisions in emerging markets. We are especially motivated by our strong belief that through this study, such firm strategists would, at least, realize that some of the basic assumptions and the boundary conditions that, perceivably, previously defined their firms' FDI location choices may not be fully applicable in the case of emerging markets. The results and findings of our study also provide useful information that would help government agencies and industry policy makers in emerging markets to better understand and regulate how MNOs and, by extension, other high-tech firms invest.

Next, we present the key traditional FDI theories that form the basis of our study, highlighting their underlying assumptions and boundary conditions. We then discuss the characteristics of mobile telecoms and emerging markets, considering how they present a sound basis for challenging the efficacy of the traditional frameworks. Following this, we develop our hypotheses and present our data and methods. Finally, we discuss our results and findings and then conclude our study.

KEY TRADITIONAL LOCATION MODELS AND THEIR UNDERLYING ASSUMPTIONS

Unarguably, much of the present understanding of the international strategies of firms was developed from the early studies of internationalization and the FDI behaviors of MNEs. Key among the theoretical frameworks considered in those early works are oligopolistic reaction (Knickerbocker, 1973) and the Uppsala Model (Johanson & Vahlne, 1977). The early studies were, however, focused on creating knowledge out of the hypothesized or observed behaviors of firms, mainly in the mature industries of Europe and North America, investing in fellow developed markets in the two regions.

From the perspective of competitive dynamics, scholars (e.g., Baum & Korn, 1996; Chen & Hambrick, 1995; Rose & Ito, 2009; Smith, Grimm, & Chen, 1989) demonstrate the tendency of firms to

counter their rivals' investment and competitive moves, including investments in foreign markets. This sort of "follow-the-leader" investment behavior, otherwise known as "oligopolistic reaction" or "bandwagon effect" (Knickerbocker, 1973; Flowers, 1976; Ito & Rose, 2002; Rose & Ito, 2008) has often defined competition among firms operating within the same industries. Underlying the concept of oligopolistic reaction is the theoretical assumption that firms naturally respond to neutralize the effects of their rivals' competitive moves (Chen & Miller, 1994). As competing firms are naturally on the look-out for each other's potential actions and are ready to react when necessary (Jayachandran, Gimeno, & Varadarajan, 1999), oligopolistic reaction has been a commonly observed phenomenon in the highly concentrated oligopolistic industries. In the oligopolistic industry, characterized by the fewness of players, it is much easier for firms to notice their rivals' competitive moves.

From the perspective of the Uppsala Model of internationalization (e.g., Johanson & Vahlne, 1977, 2009), firms are expected to launch their cross-border expansion bids in stages or steps, entering first into the psychically close markets with perceived low risks before venturing into the more distant ones. Experiential knowledge gained from those culturally and geographically close initial markets of entry facilitates entries into the subsequent and relatively more risky markets (Barkema, Bell, & Pennings, 1996; Delios & Henisz, 2003). To enhance their chances of success in foreign markets, Andersen and Strandkov (1998) contend that internationalizing firms must be conscious of their choices of new investment locations.

For the cross-border expansion venture to be successful, the internationalizing firm must consider the conditions of the target markets before making investing. Thus, deciding on the most promising market to invest is the major first factor to consider for the successful execution of foreign market operations (Birkinshaw, 1997; Eriksson, Johanson, Majkgard, A., & Sharma, 1997; Johanson & Vahlne, 1977). In this regard, factors relating to the target market, including market size (or national population) and growth potentials (in terms of GDP), openness, purchasing power of the populace (relating to per capita GDP), level of economic development, nature of the market or institutional environment, level of

infrastructural development, and availability of cheap labor constitute the major considerations for choice of foreign investment locations (e.g., Kumar, Stam, & Joachimsthaler, 1994; Sakarya, Eckman, & Hyllegard, 2007).

Summarily, a strong argument for oligopolistic reaction or the bandwagon-effect investment strategy is that firms follow their rivals' investments, entering and investing in the same foreign markets as their leaders. By so doing, the firms try to maintain the status quo of market or industry competition, rather than allow rivals to arrogate themselves of any undue competitive advantages. In the case of the Uppsala internationalization model, firms are conscious that investing in foreign markets is a very risky venture that could backfire and put them in big troubles and, as such, they try to ensure not to go into the wrong markets. In this regard, market selection has been a major issue relating to the internationalization process, whereby firms scrutinize potential targets (based on a variety of conditions, such as mentioned above) before making any choices.

Underlying these two theoretical frameworks – oligopolistic reaction and the Uppsala internationalization model – are certain underlying assumptions. The two models, which were developed with respect to the behaviors of firms in the mature industries in developed markets, mainly assumed that markets were perfect, with firms competing freely. The market institutions were also assumed to be well developed and very strong, with efficient and effective regulatory systems, and the level of infrastructural development was believed to be high. Oligopolistic reaction, particularly, worked on the condition of pure oligopoly, where firms are few and their produced goods and services are homogenous. Firms under such perfect oligopoly would be independent, with the actions taken by one firm (such as entry into a new foreign market or change in output or price) affecting those of others (rivals) and thus easily noticeable. With such easy noticeability, the affected firms would checkmate the disruptors by marching each investment move with a countermove and preventing them from arrogating themselves with any undue competitive advantages. Experience in international operations is a major factor for choice of FDI locations, considering the Uppsala model, as firms with better knowledge of foreign markets and

experience in international operations are expected be more international than those lacking in experiential knowledge.

UNIQUENESS OF MOBILE AND EMERGING MARKETS

The era of mobile telephony commenced with the introduction of the first cellular or cordless telephone system in the early 1980s (Stuber, 2002). Since then, several generations of mobile technologies have emerged, with the launch in 1981 of the first generation (1G) that was based on analogue FM (frequency modulation) and designed to offer narrow-band circuit-switched voice services. The second-generation (2G) system came into operation in 1992 with the launch, in Finland, of the first-ever wireless digital technology that offered improved spectral efficiency and voice quality. The quest for better quality of service and customer satisfaction led to the launch of 3G technology in 2001, followed by that of 4G/LTE (long-term evolution) networks by TeliaSonera in Stockholm and Oslo in 2009 (TeleGeography, 2009), with plans already underway for the rollout of 5G technologies by 2020 (De Looper, 2016).

Mobile telecoms, as an industry, has several context-specific attributes that differentiate it from other industries. Mobile is a strategic industry, considering its role in national security and economic growth (Teece, 1991). Entry to new players is highly restricted with many barriers (Boddewyn & Brewer, 1994; Bourreau & Doğan, 2001), making the mobile telecoms industry a concentrated oligopoly (Gruber, 2001; Gruber & Verboven, 2001). The activities of mobile operators, including their investment moves and competitive actions are under the strict surveillance of the government through its designated agencies, making the industry highly regulated (Clifton, Comín, & Díaz-Fuentes, 2011; Nicolaidis, 1994; Sarkar, Cavusgil, & Aulakh, 1999). The services provided by mobile operators are very technology-oriented (Ferreira Ribeiro, Oliveira De Miranda Jr., Borini, & Bernardes, 2014; Johansson, 1994; Kim, Lee, & Kim, 2009), without much need for any physical contact between the service providers (MNOs) and their customers (network subscribers or mobile users) (Kristensson, Matthing, & Johansson, 2008; Meuter, Ostrom, Roundtree, & Bitner, 2000).

The concept of emerging markets came to light when in 1981, Van Agtmael of the International Finance Corporation (IFC), World Bank Group, used it to refer to countries that are not too rich or too poor and not too closed to foreign capital. Broadly speaking, emerging markets are countries characterized by low income and rapid growth, and where economic liberalization drives growth (Hoskisson, Eden, Lau, & Wright, 2000). Emerging market countries are typically associated with numerous institutional and environmental challenges (Khanna & Palepu, 1997; Hoskisson, Johnson, Tihanyi, White, 2005; Cuervo-Cazurra & Genc, 2008) and high dynamism (Wright, Filatotchev, Hoskisson, & Peng, 2005), making market entry and business operations difficult. Nonetheless, being the new major drivers of global economic growth and competitiveness and providing high investment returns (London & Hart, 2004), emerging markets have become the new engines driving global economic growth (Teagarden, 2012). The dwindling growth prospects in developed countries has also contributed toward the growing attractiveness of emerging markets to FDI (Hanson, 2012; Hoskisson *et al.*, 2000).

Considering the foregoing, we argue that both the mobile telecoms industry and emerging markets provide strong incentives for firms to behave in manners that are different from what the extant literature has said regarding FDI location choices. Particularly, oligopolistic reaction and the Uppsala model are challenged, considering that their underlying assumptions did not capture the two emerging realities of our time: mobile telecoms and emerging markets, both of which, surprisingly, came to light in 1981. We strongly believe that the inherent attributes of both contexts, which differ from those of the mature industries and developed markets, would put the two key FDI theoretical frameworks in a precarious position. We, therefore, focus our study on divulging how far the theories behind oligopolistic reaction and Uppsala model would hold when pushed the limits of their boundaries, considering how mobile network operators (MNOs) choose investment locations in emerging markets.

OVERVIEW OF MOBILE IN SUB-SAHARAN AFRICA

Mobile telecommunication commenced in SSA in 1989, with the respective launch of operations by Portugal Telecom (PT) in the West African country of Guinea Bissau and Millicom in the Indian Ocean

island-country of Mauritius, albeit the regional industry barely took off in the late 1990s. With the rapid uptake and growing demand for mobile services, many more MNOs, both indigenous and non-indigenous, have sought FDI across the 49-country regional market over the years. The establishment of an enabling investment climate, through the institution of market reforms (privatization, liberalization, and deregulation) contributed in freeing up the traditionally state-owned, monopoly-oriented regional industry (Cowhey & Klimenko, 2001; Williams & Kwofi, 2014).

There were 173 MNOs that operated in SSA as of 2014 – an approximate average of 3.5 MNOs per country. Of this number, 157 were single-market (non-internationalized) firms, whereas the 16 others that form the empirical basis for this study had undertaken FDI in multiple countries, including their total 120 investment locations across SSA. Majority 29 countries had allowed full competition (in 2014), whereas 12 only allowed partial competition. Six countries operated monopoly mobile market while the political upheavals in Somalia and South Sudan make it difficult to know how MNOs operated. Table 1 depicts the profiles of the 16 multinational operators, with their operation bases highlighted in Table 2.

Table 1 goes about here

Table 2 goes about here

With a population of over one billion (World Population Review, 2018), SSA is a large economic region. The 49 constituent countries have a wide diversity of market sizes, economic strengths, and levels of infrastructural development. While Nigeria, the most populous country, had about 185 million people as of the date of our data collection, the least-populated, Seychelles, had a population of roughly 97 thousand (GSMA, 2017). Statistics Times (2017) reports that, with a GDP of US \$415.080 billion in 2016, Nigeria is SSA's biggest economy while Sao Tome, having a GDP of US \$351 million in the same year, is the smallest. Seychelles has the best standard of living, with per capita GDP (nominal) of US \$15,400 in 2016, whereas Somalia has the lowest with a nominal GDP per capita of US \$145.06 (IMF, 2017; World Bank, 2017). South Africa is SSA's most developed market, with South Sudan as the least

developed. The cultural heterogeneity of this fast-emerging region of SSA is worthy of emphasis: the countries differ widely in terms of spoken language, with English, French, Portuguese, and Spanish, respectively, as the dominant official languages. Table 3 depicts the subregional and linguistic (official) composition of the region.

Table 3 goes about here

With the inherent characteristics of mobile telecoms and SSA as an emerging-market region, we expect MNOs to adopt some context-specific investment strategies. In their study of how the indigenous MNOs in SSA choose investment locations and engage each other in multimarket competition, Dike and Rose (2019) found that the firms adopt strategies that both bolster and contradict the prescriptions of previous research. With this, we strongly believe that this current study will generate some context-specific insights, contradictory to the findings of previous research, for the advancement of know-how on the FDI location choices of firms.

HYPOTHESES

The choice of where to invest has been a major challenge to firms seeking international diversity, as operating in foreign markets, though a beneficial growth and competitive strategy, may also be catastrophic. Andersen and Strandskov (1998) posit that proper choice of investment locations is very crucial for the success of a firm's international strategy. We specifically consider those country factors, which, as Dunning (2000) points out, offer the locational advantages that make one country a more preferred target for investment than the others. We also consider that factors relating to the firm, especially knowledge of foreign markets and experience in international operations, would have impact on its foreign investment location decisions.

The target market must be very attractive, in terms of availability of sustainable opportunities for investors (Dunning, 2001). Luo and Tung (2007) show that firms invest more in the high-growth markets with favorable investment climate, based on the presumption that such locations would generate greater

competitive advantages and investment returns. There high tendency of firms to undertake FDI in the high-growth markets that can generate more sustainable competitive advantages (Aaker & Day, 1986; Luo & Tung, 2007; Wernerfelt & Montgomery, 1986). Bonardi, Hillman, and Keim (2005) note that basic characteristics relating to the economic and political attractiveness of a country affect the entry decisions of foreign firms. Johanson and Vahlne (1977) and Dunning (1988) demonstrate the tendency of firms to opt for investments in countries with large populations or market sizes and favorable economic potentials (in terms of sound GDP growth and per capita income).

There is also a general tendency of firms to undertake FDI in countries that command potentials for prompt ROI (Asiedu, 2002, 2006; Brouthers, 2013). Countries associated with low political and market risks, openness to business (economic openness), and high volumes of inward FDI also command higher attractiveness for investment (Terpstra & Yu, 1988), reaffirming the L-advantages of Dunning's eclectic paradigm (Dunning, 1988). Strong economic growth potentials (in terms of GDP), economic openness, high standard of living and purchasing power, well-developed infrastructure, and high volumes of FDI inflows are also major considerations for choice of investment locations (Kumar *et al.*, 1994, Sakarya *et al.*, 2007). Asiedu (2006) notes the tendency of large countries with strong economic growth potentials, better standards of living, favorable government and regulatory policies, and sound market institutions to attract more FDI inflows. Countries having economic openness, favorable legal and regulative frameworks, and low political and market risks are also attractive investment locations (Aharoni, 1996; Asiedu, 2006; Brouthers, 2013; Terpstra & Yu, 1988).

With respect to the telecommunication industry, some studies (Gerpott & Jakopin, 2007, 2008; Pogrebnyakov, 2007) claim that MNOs substantially consider such issues as political risk and cultural distance, population size (market size), level of economic wealth and development, as well as intensity of competition in their target hosts before investing. Research (Pogrebnyakov, 2008; Luiz & Stephan, 2012) also demonstrates strong evidence that MNOs give higher priority to countries with higher attractiveness to foreign investment. Chanakira (2012) contends that telecoms firms are generally attracted to African

countries with large market size (in terms of population and size of the national economy). Consequently, we hypothesize as follows:

Hypothesis 1A: MNOs have a higher propensity to invest in emerging markets with stronger economic growth.

Hypothesis 1B: MNOs have a higher propensity to invest in emerging markets with better standards of living.

Hypothesis 1C: MNOs have a higher propensity to invest in more populated emerging markets

The degree of closeness between the home market of the investing firm and the target market – expressed in terms of psychic distance (Johanson & Vahlne, 1977), including cultural distance (Kogut & Singh, 1988; Morosini, Shane, & Singh, 1998; Shenkar, 2001) and geographic and economic distance (Tsang & Yip, 2007) – plays a very important role in the choice of foreign investment locations. Firms generally tend to invest in countries considered to be psychically close to their domestic markets before launching operations afield; with the experiential knowledge gained from the initial, relatively more familiar markets facilitating entry into the subsequent farther and more risky markets (Barkema *et al.*, 1996). Another dimension of country closeness, influencing firms' decisions to invest in foreign markets is institutional distance, a measure of cross-country differences (Kostova, 1999; Kostova & Zaheer, 1999), with Xu and Shenkar (2002) demonstrating the likelihood of a firm to invest in country markets considered to be institutionally-close before entering the more distant ones.

The quality of the institution is another important country-specific factor influencing the decision of MNEs to invest in each foreign location (Globerman & Shapiro, 2003; Henisz & Zelner, 2005). North (1990) defines institutions to include the formal and/or informal constraints that shape human interactions, referring broadly to the rules of the game in the given society. Dunning (2009) contends that the institutional environment – comprising the three dimensions of regulatory institutions (Brouthers, 2002), political institutions (Garrett & Lange, 1995; Holburn & Zelner, 2010), and societal institutions (Xu & Shenkar, 2002) – constitutes a crucial consideration for choice of foreign investment locations

among firms. Peng, Wang, and Jiang (2008) show that a country's market institutions contribute both in determining its attractiveness to foreign investors and shaping the way business is done. There is a high tendency for countries having fair and transparent institutional frameworks and low political risks to receive higher FDI inflows (Buckley, Yu, Liu, Munjal, & Tao, 2016; Busse & Hefeker, 2007).

High quality institutions enable easy access to both market and non-market information (Pezeshkan, Fainshmidt, Nair, Frazier, & Markowski, 2016), thereby reducing information asymmetry and making firms less reliant on informal sources of information (Peng, 2003; Peng *et al.*, 2008). Puck, Rogers, and Mohr (2013) suggest that the degree of perception of uncertainty is very low in countries that have high-quality institutions. Studies (Dunning, 1988; Dunning & Lundan, 2008; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000) contend that institutionally-strong countries also provide better protection for businesses and facilitate investor confidence, as they pose lower expropriation hazards (the possible forceful possession or seizure of its subsidiaries or property by host governments) for foreign investors. Countries that have strong and enforceable rules and regulations (including property rights) and stable political regimes tend to attract lower investment costs (Williamson, 1991) and, thus, are very attractive FDI locations (Bénassy-Quéré, Maylis, & Mayer, 2007; Knack & Keefer, 1995; Meyer, 2001).

The importance of national institution as a major factor influencing the cross-border expansion of mobile telecommunication has received considerable academic attention, with scholars (Clegg & Kamall, 1998; Globerman & Shapiro, 2003; Henisz & Zelner, 2005; Kim *et al.*, 2009; Pogrebyakov, 2008; Pogrebyakov & Maitland, 2011) contending that the major regulatory changes (privatization, liberalization, and deregulation), which took place in many countries from the end of the 1970s, provided the pathway for mobile operators to invest in foreign markets. Previous research (Bonardi, 2004; Clifton, Diaz-Fuentes, & Revuelta, 2010) shows that internationalization among MNOs depends on the timing and quality of regulatory policies across countries.

Cultural distance, referring to differences in national culture systems (Brouthers & Brouthers, 2001; Tihanyi, Griffith, & Russell, 2005), is particularly argued to be the major institutional variable

considered by MNOs in their decisions concerning choice of foreign investment locations (Gerpott & Jakopin, 2008; Pogrebyakov & Maitland, 2011). Cultural distance between the target market and the home market of the firm is a major consideration for locating investment abroad cultural distance (Kogut & Singh, 1988; Shenkar, 2001). The general tendency is for firms to first invest in culturally close countries before launching operations afield (Johanson & Vahlne, 2009). Knowledge gained from those initial entries facilitates subsequent entries into the more culturally far markets (Barkema *et al.*, 1996).

Pogrebnyakov (2008) observes that cultural distance, mainly in terms of spoken language, plays a very important role in the foreign market investment location choices of mobile operators. There is, therefore, value in understanding how cultural distance affects the foreign market selection decisions of mobile operators in SSA, considering especially the non-indigenous ones headquartered in the advanced markets, given the wide cultural distance between the countries of SSA and their far more advanced home markets (Luo & Tung, 2007; Jackson & Deeg, 2008).

The degree of control of corruption in a country is a further variable that would determine the propensity of an MNO to invest, as Habib and Zurawicki (2002) suggest that less corrupt countries are more attractive investment locations. Thus, it is reasonable to assume that MNOs in SSA would initially enter countries considered to be culturally close (along the dimensions of similarity of language and colonial ties) to their domestic markets, and presumably low level of corruption, before venturing into the more distant ones. Hence, we hypothesize:

Hypothesis 2A: MNOs have a higher propensity to invest in emerging markets that share a common language with their home markets.

Hypothesis 2B: MNOs have a higher propensity to invest in emerging markets that have colonial ties with their home markets.

Hypothesis 2C: MNOs have a higher propensity to invest in emerging markets with lower levels of corruption.

High level of uncertainty and risk perception in emerging markets is argued to create high LOF for non-indigenous firms (Cuervo-Cazurra & Genc, 2008; Peng *et al.*, 2008), especially those from developed markets. This, in turn, creates high transaction and operation costs (Bevan, Estrin & Meyer, 2004; Cuervo-Cazurra, Maloney, & Manrakhan, 2007; García-Canal & Guillén, 2008; Meyer, 2001; Williamson, 1981), which dampen the prospects of profitable business for the foreign firms. Thus, non-indigenous firms, mainly those from developed markets, seeking to invest in emerging markets must not underestimate the strategic and economic implications of their impending actions. Research (Hoskisson *et al.*, 2005; Khanna & Palepu, 2005) shows that poor estimation of the degree of LOF, which often results in the deployment of non-matching Western-styled business models and strategies, is the major cause of failure of developed market MNEs in emerging markets.

Nonetheless, LOF can be mitigated through previous international experience (Benito & Gripsrud, 1992; Zaheer, 1995), demonstrating the important role of knowledge and experience in international operations (Barkema & Drogendijk, 2007; Eriksson *et al.*, 1997; Johanson & Vahlne, 1977), as a major driver of the cross-border expansion of firms (Daily, Certo, & Dalton, 2000; Eriksson *et al.*, 1997). Firms that sound experiential knowledge developed through multinational operations are better off in dealing with foreign market uncertainties and risks (Casillas, Moreno, Acedo, Gallego, & Ramos, 2009; Johanson & Vahlne, 1990).

Davidson (1980) notes that knowledge about and experience in the international market are both critical to the internationalization process, as Li (1994) demonstrates that firms are more likely to invest in countries known to them or their key competitors. With previous international experience, firms can more conveniently select appropriate alliance partners through whose social networks the challenges of cultural distance and LOF could be minimized (Yiu & Makino, 2002). Besides, experience acquired through investing in one foreign market could help in expanding into others, as countries located in the same region tend to share similar business environments (Arregle, Miller, Hitt, & Beamish, 2013).

This line of argument is also upheld in the case of the mobile telecom industry, as it has been observed that previous international experience is a major driving force for the cross-border expansion of MNOs (Eggers, 2012; Luiz & Stephan, 2012; Pogrebnyakov, 2007). Accordingly, we hypothesize:

Hypothesis 3: MNOs with wider experiential knowledge in international operations have a higher propensity to invest in emerging markets.

Knickerbocker (1973) noted the tendency of firms operating in oligopolistic environments to respond to rivals' undertaking of FDI in new markets by establishing their own subsidiaries in the same markets, leading to "rapid proliferation and spatial bunching" (Rose & Ito, 2008: 866) of FDI. Such strategic behavior has been observed across a variety of manufacturing and service industries (Ball & Tschoegl, 1982; Flowers, 1976; Ito & Rose, 2002; Rose & Ito, 2009), and is posited to be associated with drivers as diverse as uncertainty and risk aversion (Head, Mayer, & Ries, 2002) and learning (Altomonte & Pennings, 2008).

Tan and Meyer (2011) contend that firms gain access to local market and industry knowledge by locating geographically close to other firms having the same or similar knowledge, leading to geographic clustering of FDI (Cantwell, 2009; Dunning, 2009). It can, therefore, be conjectured that the ability of the firm to identify and geographically co-locate with its industry rivals or other firms doing closely related businesses is an additional factor influencing choice of investment locations.

Following rivals' FDI moves represents a very competitive strategy on the part of a firm. It may allow the firm to blunt its rivals' early-mover advantages, which is especially important in a rapidly evolving and fast-growth, high-tech industrial sector such as mobile telecoms in such a very dynamic and fast-emerging regional market as SSA. The explosive nature of the growth of the mobile telecoms industry in the SSA region also serves as a barrier to collusion; the rapid expansion in both the number of markets of operation and competitors means that the mobile telecom firms are less likely to have developed familiarity with one another, thereby making it more difficult to reach implicit or explicit

consensus regarding potential carving up of markets for reduced competition. On this basis, we expect to observe imitative behavior among the MNOs operating in SSA, with respect to their investment location choices and market entry decisions, and hypothesize as follows:

Hypothesis 4: Mobile network operators in emerging markets exhibit oligopolistic reaction, specifically a bandwagon effect, competing extensively with each other in their foreign direct investments.

METHODOLOGY

Our choice of Sub-Saharan Africa (SSA) as the geographic location for testing our hypotheses derives from its status as the fastest-growth mobile region on the globe (GSMA, 2017). We collected our empirical data from online secondary sources, including the website of the telecommunications commission of the various countries and those of the 16 multinational MNOs being investigated. Data have also been collected from the databases of the Global System for Mobile Association (GSMA)³, the International Telecommunications Union (ITU)⁴, and the Global Economy⁵ and World Bank⁶ databases, as well as from media (newspaper and journal) publications. This combination of internal and external data sources is aimed at strengthening the validity our study. We consider, as per the advice of industry experts, that it might take two years or more for an MNO to make its investment location decisions and thus assume that the first two entrants into SSA in 1989 made their investment decisions somewhere around 1986, whereas those that invested in 2014 made theirs latest by 2012.

We model the propensity to invest using binary logistic regression, following Rose and Ito (2008). Our dependent variable takes the value of 1 if the firm has an investment position in the country, and zero otherwise. Hypotheses 1A, 1B, and 1C are tested using variables representing country-level

³ The GSMA is an industry association that represents nearly 1,100 companies working in the mobile telecommunications ecosystem (<https://www.gsma.com>).

⁴ The ITU is an agency of the United Nations (<http://www.itu.int>).

⁵ <http://www.theglobaleconomy.com/>

⁶ <http://www.worldbank.org>

economic growth, GDP per capita, and the natural logarithm of population, respectively; these data are sourced from The Global Economy and World Bank websites. Hypotheses 2A and 2B are tested using dummy variables to represent a common language and colonial ties, respectively, between the potential host country and the firm's country of origin. Hypothesis 2C is tested using a three-item factor (78.7% variance explained and $\alpha = 0.84$) computed using the factor scores of three corruption-related variables: control of corruption, regulatory quality, and political stability, all sourced from The Global Economy website. We test Hypothesis 3 using two variables, representing the firm's overall and SSA-specific international experience.

We also include several control variables, such as the target country's household consumption as a percentage of GDP, the number of mobile subscribers per 100 people, and the percentage of the population living in urban areas. Other control variables pertain to the country's regional location (East Africa or West Africa) and language (French or Portuguese). In addition, we include dummy variables that represent the firm's origin: developing market, indigenous SSA, and domestic. All time-varying variables are measured either at three years prior to the entry or as of 2011 (three years prior to the data collection point of 2014); the three-year window was selected based on discussion with industry experts.

With a maximum variance inflation factor under 3.7, multicollinearity may have some effect on the estimation of the model; therefore, we estimate the model twice, including the two measures of experiential knowledge separately. Both models have reasonable pseudo- R^2 values and strong classification ability, as expected, given the uneven split in the dependent variable. However, both specificity and sensitivity are acceptable (minimum of 84.5%) in both models. The descriptive statistics are shown in Table 4 and the results of estimating the logistic regression model as Table 5.

Table 4 goes about here

Table 5 goes about here

We test Hypothesis 4 using a dyadic analysis of how the mobile operators compete, considering how often pairs of firms compete in each of the individual markets in which at least one of them operated as of 2014.⁷ Consistent with the pairwise analysis, we investigate issues relating to location and timing of the cross-border investments of the group of oligopolistic MNOs. Building on Scott (1982) and following Rose and Ito (2008), we use the hypergeometric distribution to compare the numbers of SSA countries in which pairs of MNOs compete to the numbers that would be expected under the assumption that the two firms undertake their strategic decisions regarding market selection and entry without considering the FDI location decisions of the other member of the dyad.

To gain a more holistic and clearer understanding of the FDI strategies of the MNOs, we made similar comparisons considering how pairs of the telecom firms compete against each other, considering the language in which business is transacted, the origins or domestic markets of the firms (indigenous versus non-indigenous), and at the subregional level (Eastern, Western, Central, and Southern). The finding that a pair of MNOs meets in significantly more markets than expected under the assumption of independent strategies suggests evidence of a bandwagon effect, while an observed number of meetings that is significantly less than expected provides evidence of an avoidance strategy on the part of at least one of the two firms. See Rose and Ito (2008: Appendix A) for a detailed description of the methodology.

RESULTS

Our initial modelling provides mixed support for the hypothesized relationships for choice of foreign investment locations among mobile operators. The hypotheses pertaining to the economic environment of the host country (H1A, H1B, and H1C) receive no support. Our data suggest, instead, that institution-related factors play more important roles in the firms' location choice decisions for SSA. While a language match between the home and host countries (H2A) may not be marginally important, colonial ties (H2B) are associated with a higher probability of the MNO being present ($p < 0.10$ and $p < 0.05$), as

⁷ Seven of the SSA countries are served by only domestic MNOs.

are lower levels of corruption (H2C, $p < 0.05$ for both models). Thus, H2B and H2C are supported. H3, which pertains to international experience, is supported for FDI in the SSA region ($p < 0.10$), but not for global FDI.

The findings pertaining to the control variables provide some additional insights into the mobile firms' choices of FDI locations in SSA. Country markets in the Eastern and Western regions appear to be more attractive to the mobile operators, compared to those in the central and southern regions, after controlling for the other variables in the model. Countries with a higher proportion of their population living in urban environments are found to be more attractive investment locations for MNOs; this is likely to be associated with the availability of mobile coverage-related infrastructure. More surprising, perhaps, are the findings pertaining to household consumption and the number of mobile subscribers per 100 people, both of which are negatively related to the probability that an MNO invests in a given country, marginal to all the other variables. This may reflect both the MNOs' desires to avoid overcrowded markets and the national governments' desires to avoid facilitating debilitating competition among the telecom firms.

With respect to oligopolistic reaction (bandwagon effect), our results of the comparison between the actual number of meetings and the expected number under the assumption of independent market entry decisions for each pair of multinational MNOs are shown in Table 6.

Table 6 goes about here

The inference is based on one-tailed tests based on the hypergeometric distribution, which can be used to represent the probability of observing numbers of meetings between two MNOs, considering the number of markets in which each operates. The top (integer) number in each cell reflects the actual number of meetings for each pair of MNOs, while the expected value, assuming independent entry strategies, is the lower, italicized number. Considering our full data, there are many instances of oligopolistic reaction or bandwagon effect between several pairs of competing MNOs, but no evidence of mutual avoidance

strategy. For example, Airtel, which operates in 17 SSA countries, competes against most of the other 15 multinational MNOs (apart from PT and Zain). Airtel meets Azur that has positions in three countries in two markets, which is not significantly different to the 1.19 meetings that would be expected, based on the hypergeometric distribution, under the assumption that these two MNOs make their market entry decisions independently. The same applies to Sudatel and Vodafone, whose meeting in just one market, Ghana, is not significantly different from their expected number of meetings (0.98).

Airtel appears to compete more strongly with Millicom, considering their actual meetings in five countries (Chad, DRC, Ghana, Rwanda, and Tanzania), relative to the expected 2.77 meetings. Etisalat and GLO meet in three markets, compared to the 1.17 markets they are expected to meet under the condition of independent market entry decisions. The head-to-head competition between Etisalat and Moov is noteworthy: Etisalat, operating in 12 largely Francophone countries, is present in all nine markets in which Moov has operations. This simply reiterates the notion that Moov remains a part of the Etisalat group⁸: questioning whether the two firms' decision-processes regarding choice of investment locations can be truly independent, as the results make it very clear that they do not seem to be worried about cannibalizing each other.

Nonetheless, after segmenting the data according to the MNOs' countries of origin – indigenous to SSA or from outside of the region – we find evidence of mutual avoidance, but no bandwagon effect, within the subset of indigenous operators (Econet, GLO, MTN, and Smile), with Econet and MTN meeting with each other in two markets, relative to their expected 2.77 meetings that would be anticipated under the assumption of independent strategies (see Table 7). This finding makes a clear suggestion that either or both of Econet and MTN adopt a mutual avoidance strategy in its competition with the other, thereby contradicting our fourth hypothesis.

Table 7 goes about here

⁸ Etisalat sold its Francophone-West Africa operations to Maroc Telecoms (rebranded to Moov) in May 2014

DISCUSSION

Academic scholars have continued for centuries to empirically investigate the factors driving the FDI location choices of firms, developing several theories and theoretical frameworks – chief among which are oligopolistic reaction and the Uppsala internationalization model – as they do so. Despite that these two frameworks have over the decades guided our understanding of FDI choice locations, the academic community seems to have forgotten that the models were developed based on the hypotheses and findings regarding how firms in the mature industries of Europe and North America chose investment locations within the two regions. The propounders of the frameworks did their works based on the situation on ground at the time of their studies, and they effectively capture the foreign investment scenario then.

With time, it should be natural for the models to start losing strength and, thus, would not be expected to provide full explanations for certain new business realities of our time, such as mobile telecoms and emerging markets. It would be foolhardy for one to expect the theory of oligopolistic reaction that was developed by Knickerbocker in 1973 and the Uppsala internationalization model, which was propounded by Johanson and Vahlne in 1977 to fully capture the investment behaviors of mobile operators in emerging markets, considering that both mobile telecoms and emerging markets only came to light in 1981. This simply means that the propounders of the two models did not put mobile telecoms and emerging markets into considering during their research.

Through this study, we addressed our underlying initial argument that these two key FDI frameworks would only provide an insufficient basis for explaining the FDI location choices of mobile network operators in the emerging market region of Sub-Saharan Africa. We considered that being strategic for both national economic growth and security and, mobile attracts strict regulation by the government – through the designated authorities. Entry barriers to newcomers are often set very high, thereby also making the industry highly oligopolistic. Emerging markets, on their part, especially the SSA countries, are very dynamic and having numerous institutional issues and infrastructural deficiencies that would inhibit the prospects of business growth.

From a theoretical perspective, our first main finding, relating to the tendency of MNOs to consider institution-related factors, including colonial ties and degree of control over corruption, in their investment decisions in SSA challenges the norm or common knowledge. The literature on FDI location choices, considering the Uppsala model, has emphasized more on country economic factors such as large population or market size, economic power, and propensity of national economic growth more than institutional variables. The implication of this finding is that mobile operators would be more motivated to target their investments in emerging markets that not only have colonial ties with their home markets but also have higher degree of control over corruption. Thus, through this finding, which emphasizes more of the relevance of market institutions over economic prosperity, makes an important contribution to the FDI literature.

The second important finding we made is that experience in international operations affects the investment location choices of MNOs in the SSA region. This does not contradict the literature as numerous other studies on FDI location choices demonstrate the role of experiential knowledge in choices relating to foreign investment locations. This finding should not be a surprise, given that several of the firms in our study, mainly those from Europe, already had international operations elsewhere before entering SSA countries. We believe that the experience and knowledge gained through those other international investments would have given them some leverage to invest in the more challenging SSA market region.

Our third key finding relates to mobile operators' adoption of both oligopolistic reaction and avoidance strategies in their decisions regarding choice of investment locations in Sub-Saharan Africa. The extant literature on competitive dynamics and multimarket competition suggests the tendency of competing firms to embrace either oligopolistic reaction or avoidance in each case, rather than adopting the two strategies simultaneously. The point, in this regard, is that this investment behavior of MNOs in the SSA region contradicts with the norm, regarding how firms from other industries chose their

investment locations mainly in developed markets. This wise, our study, again, makes an important contribution to the FDI literature.

With these nuanced findings, our position that the two key FDI location frameworks – oligopolistic reaction or bandwagon effect and the Uppsala internationalization model – would be insufficient for explaining the investment behaviors of certain category of firms in certain locations has gained support. Evidently, the investment decisions of MNOs in SSA have revealed that firms may be influenced by the nature of the industry they are a part of and the business environment in the target market when considering where to invest. Our findings make real sense, considering that the region has lots of institutional and technological infrastructural challenges, which would affect the decisions of mobile operators to invest. Thus, our work re-echoes the role of context in understanding the behaviors of firms, as it would be expected for firms to behave differently under varying conditions.

CONCLUSION

This study aimed at investigating the extent mobile telecommunication firms recognize the postulations of the early internationalization and FDI theoretical frameworks and their underlying assumptions in their choice of investment locations in emerging markets, bearing on the 49-country Sub-Saharan Africa. We started by arguing that the studies upon which the early frameworks – oligopolistic reaction and the Uppsala internationalization model – that have mainly guided common knowledge and understanding about choice of FDI locations, were undertaken on firms in the mature industries of developed markets and, thus, that they may not fully apply in certain unforeseen contexts. We identified mobile telecoms, a high-tech industry, in emerging markets as an instance of such contexts under which the applicability of those theories comes into question and went ahead to undertake an empirical investigation based on the cross-border investment locations of mobile network operators (MNOs) across the SSA regional market.

Based on the conjectures and findings of previous research, we developed several hypotheses on how mobile network operators choose investment locations. Our empirical data, relating to the investment

moves of the MNOs since the inception of the mobile telecom industry in the region, were derived from online sources. Our findings revealed the tendency of the firms to choose investment locations based on some institutional considerations (particularly, colonial ties and level of control over corruption) and their experience in international operations. We further found that the mobile operators adopt both oligopolistic reaction (bandwagon effect) and avoidance strategies in their choices of foreign investment locations.

As the early studies have emphasized on economic factors as major considerations for choice of foreign investment locations among firms, our finding of institutional factors as rather the main FDI location factors is somewhat astonishing, adding to the novelty of this study. The same goes for our finding that mobile operators adopt both oligopolistic reaction and avoidance strategies in their investment location choice decisions, which is contrary to the suggestion of prior studies that firms mainly adopted just one strategy at a given instance in their contention with rivals.

With these nuanced findings, we concluded that the underpinning argument for our study has gained reasonable empirical proof. As evident from the study, MNOs adopt some strategies beyond the limits of early theoretical framings when considering where to locate foreign investment. Thus, we can conclusively claim that the underlying assumptions and boundary conditions of the early theories of internationalization and FDI locations do not fully hold in the context of the mobile telecommunications, considering the behaviors of the multinational mobile operators embedded in our chosen locational setting – Sub-Saharan Africa.

Since our work was based solely on investments in a single emerging-market region we recommend that future studies should consider other such regions elsewhere as well. Besides, mobile telecoms, the business context of our study, is only a subsector of the broader high-tech industry. We strongly believe that adopting firms from other high-tech subsectors in other emerging-market regions would generate more insights to enable a more holistic view of how high-tech firms choose investment locations in emerging-market regions. The findings of the future studies would help in enhancing, or otherwise, the generalizability of our own arguments and findings.

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Table 1. Profiles of the Multinational MNOs

	Name of MNO	Home Market	#Countries of Operation in SSA	#Worldwide Operation Bases
1	Vodafone*	United Kingdom	7	28
2	Orange	France	15	28
3	Millicom	Luxemburg	7	17
4	PT	Portugal	4	9
5	Smart	Switzerland	3	3
6	Airtel	India	17	20
7	Etisalat	United Arab Emirates	12	18
8	Africell	Lebanon	4	4
9	Azur	United Arab Emirates	3	3
10	Zain	Kuwait	2	8
11	Moov	Morocco	9	18
12	MTN	South Africa	17	23
13	Econet*	South Africa	7	22
14	Sudatel	Sudan	6	6
15	GLO	Nigeria	4	4
16	Smile*	Mauritius*	3	3

* Vodafone goes by both the global brand name, Vodafone, and Vodacom in SSA. Econet is owned by a Zimbabwean but registered in South Africa, while Smile is owned by a South African but registered in Mauritius. The origins of the two firms are often quoted as Zimbabwe or South Africa and South Africa or Mauritius depending on the source.

Table 2. MNO Operation Bases in SSA and Entry Dates

	Africell	Airtel	Azur	Econet	Etisalat	GLO	Millicom	Moov	MTN	Orange	Portugal Telecom	Smart	Smile	Sudatel	Vodafone	Zain	#MNOs
Angola											2000						1
Benin					2005	2008		2014	2006								4
Botswana				2004					2005	2003							3
Burkina Faso		2010			2005			2006									3
Burundi				2009								2014					2
Cameroun									2000	2002							2
Cape Verde											1995						1
CAR			2007	2014	2005			2014		2006							5
Chad		2010					2005										2
Comoros																	-
Congo		2010	2010						2005								3
Cote d'Ivoire					2005	2009		2014	2005	2002							5
Djibouti																	-
DRC	2012	2010					2007			2012					2001		5
Equatorial Guinea										2006							1
Eritrea																	-
Ethiopia																	-
Gabon		2010	2009		2005			2007									4
Gambia	2001																1
Ghana		'10				2008	1992		2006					2008	2008		6
Guinea									2006	2006				2012			3
Guinea Bissau									2006	2006	1989						3
Kenya		2010		2004						2008					2000		4
Lesotho				2008											1996		2
Liberia									2006								1
Madagascar.		2010								2003							2
Malawi		2010															1
Mali					2014			2009		2006							3
Mauritania					2014			2001						2007			3
Mauritius							1989			2008							2
Mozambique															2003		1

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Namibia																	-
Niger		2010			2005			2014		2008							4
Nigeria		2010		2001	2008	2003			2001				2013				6
Rwanda		2012					2009		1998								3
Sao T. & Principe											1990						1
Senegal							1999			2006				2009			3
Seychelles		1998															1
Sierra Leone	2009	2010															2
Somalia																	-
South Africa									1994						1994		2
South Sudan									2011					1993		1997	3
Sudan					2004				2005					1993		1997	4
Swaziland									1998								1
Tanzania		2010			1999		1993					2014	2012		1999		6
Togo					2005			2014									2
Uganda	2014	2010							1998	2009		2014	2009				6
Zambia		2010							2005								2
Zimbabwe				1998													1

Authors' compilation based on data sourced from GSMA Intelligence, The Global Economy, ITU, and MNO websites

Table 3 - Subregional and Linguistic Composition of Sub-Saharan Africa

Subregion	Constituent Country Markets and Primary Languages	# Countries
East Africa	Comoros (F), Djibouti (F), Eritrea (E), Ethiopia (A), Kenya (E), Seychelles (E), Somalia (E/I), South Sudan (E), Sudan (E), Tanzania (E), and Uganda (E).	11
West Africa	Benin (F), Burkina Faso (F), Cape Verde We, Cote d'Ivoire (Ivory Coast) (F), Gambia (E), Ghana (E), Guinea (F), Guinea Bissau (P), Liberia (E), Mali (F), Mauritania (F), Niger (F), Nigeria (E), Senegal (F), Sierra Leone (E), and Togo (F).	16
Central Africa	Burundi (F), Cameroon (F), Central African Republic (CAR) (F), Chad (F), Congo Republic (Congo Brazzaville) (F), Democratic Republic of Congo (DRC) (F), Equatorial Guinea (S), Gabon (F), Rwanda* (E), and Sao Tome & Principe (P)	10
Southern Africa	Angola (P), Botswana (E), Lesotho (E), Madagascar (F), Malawi (E), Mauritius (E), Mozambique (P), Namibia (E), South Africa (E), Swaziland (E), Zambia (E), and Zimbabwe (E)	12

*English became the official language of Rwanda in 2009. Note: A=Amharic; E=English; F=French; I=Italian; P=Portuguese; S=Spanish

Table 4. Descriptive Statistics

Variable	<i>n</i>	Minimum	Maximum	Mean	Std. Deviation
Present? (Dependent)	672	0	1	0.18	0.4
Economic Growth (H1A)	671	-30.2	35.2	5.2	3.9
GDP per capita (H1B)	668	521.0	37726.0	4848.3	7104.1
<i>ln</i> Population (H1C)	672	-2.53	5.13	2.01	1.58
Language Match (H2A)	672	0	1	0.3	0.5
Colonial Ties (H2B)	672	0	1	0.2	0.4
Corruption (H2C)	661	-3.0	2.8	0.0	1.0
Total FDI in SSA (H3)	672	2	17	7.5	4.9
Total Global FDI (H3)	672	3	28	13.4	9.0
Controls:					
Household Consumption as % of GDP	609	15.6	133.1	71.6	21.1
Mobile Subscribers per 100 People	671	0.0	179.5	62.6	39.7
% Urban Population	672	9.6	86.4	39.9	15.7
East Africa	672	0	1	0.1	0.3
West Africa	672	0	1	0.4	0.5
Developed Market Firm	672	0	1	0.3	0.5
Indigenous Firm	672	0	1	0.3	0.5
French-speaking Nation	672	0	1	0.5	0.5
Portuguese-speaking Nation	672	0	1	0.1	0.3
Domestic Firm	672	0	1	0.0	0.1

Table 5. Logistic Regression Results

Variable	Model 1	Model 2
Constant	1.05	0.71
Economic Growth (H1A)	-0.00	-0.02
GDP per capita (H1B)	0.00	0.00
<i>ln</i> Population (H1C)	-0.02	0.00
Language Match (H2A)	0.01	-0.22
Colonial Ties (H2B)	1.57*	1.78**
Corruption (H2C)	1.07**	1.05**
Total FDI in SSA (H3)		0.09*
Total Global FDI (H3)	0.04	
Household Consumption as % of GDP	-0.04*	-0.03*
Mobile Subscribers per 100 People	-0.17***	-0.17***
% Urban Population	0.15***	0.14***
East Africa	4.70***	4.69***
West Africa	2.46***	2.48***
Developed Market Firm	-0.49	-0.20
Indigenous Firm	-0.86	-0.86
French-speaking Nation	1.01	1.04
Portuguese-speaking Nation	-2.10	-2.06
Domestic Firm	1.92	2.17
<i>n</i>	599	599
Cox & Snell pseudo- <i>R</i> ²	0.50	0.50
% correctly classified	97.2	96.8

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6. Hypergeometric Analysis for Multimarket Competition in 2014 (expected values italicized) – Full data

		Af	Ai	Az	Ec	Et	GL	Mi	Mo	MT	Or	PT	Sma	Smi	Su	Vo
	Countries	4	17	3	7	12	4	7	9	17	15	4	3	3	6	7
Africell	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Airtel	17	3 <i>1.58</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Azur	3	0 <i>0.28</i>	2 <i>1.19</i>	-	-	-	-	-	-	-	-	-	-	-	-	-
Econet	7	0 <i>0.65</i>	2 <i>2.77</i>	1 <i>0.49</i>	-	-	-	-	-	-	-	-	-	-	-	-
Etisalat	12	0 <i>1.12</i>	5 <i>4.74</i>	2 <i>0.84</i>	2 <i>1.95</i>	-	-	-	-	-	-	-	-	-	-	-
GLO	4	0 <i>0.37</i>	2 <i>1.58</i>	0 <i>0.28</i>	1 <i>0.65</i>	3 [†] <i>1.12</i>	-	-	-	-	-	-	-	-	-	-
Millicom	7	1 <i>0.65</i>	5 [†] <i>2.77</i>	0 <i>0.49</i>	0 <i>1.14</i>	1 <i>1.95</i>	1 <i>0.65</i>	-	-	-	-	-	-	-	-	-
Moov	9	0 <i>0.84</i>	3 <i>3.56</i>	2 <i>0.63</i>	1 <i>1.47</i>	9** <i>2.51</i>	2 <i>0.84</i>	0 <i>1.47</i>	-	-	-	-	-	-	-	-
MTN	17	1 <i>1.58</i>	6 <i>6.72</i>	1 <i>1.19</i>	2 <i>2.77</i>	4 <i>4.74</i>	4* <i>1.58</i>	2 <i>2.77</i>	2 <i>3.56</i>	-	-	-	-	-	-	-
Orange	15	2 <i>1.40</i>	5 <i>5.93</i>	1 <i>1.05</i>	3 <i>2.44</i>	4 <i>4.19</i>	1 <i>1.40</i>	3 <i>2.44</i>	4 <i>3.14</i>	6 <i>5.93</i>	-	-	-	-	-	-
PT	4	0 <i>0.37</i>	0 <i>1.58</i>	0 <i>0.28</i>	0 <i>0.65</i>	0 <i>1.12</i>	0 <i>0.37</i>	0 <i>0.65</i>	0 <i>0.84</i>	1 <i>1.58</i>	1 <i>1.40</i>	-	-	-	-	-
Smart	3	1 <i>0.28</i>	2 <i>1.19</i>	0 <i>0.21</i>	1 <i>0.49</i>	1 <i>0.84</i>	0 <i>0.28</i>	1 <i>0.49</i>	0 <i>0.63</i>	1 <i>1.19</i>	1 <i>1.05</i>	0 <i>0.28</i>	-	-	-	-
Smile	3	1 <i>0.28</i>	3 [†] <i>1.19</i>	0 <i>0.21</i>	1 <i>0.49</i>	2 <i>0.84</i>	1 <i>0.28</i>	1 <i>0.49</i>	0 <i>0.63</i>	2 <i>1.19</i>	1 <i>1.05</i>	0 <i>0.28</i>	2** <i>0.21</i>	-	-	-
Sudatel	6	0 <i>0.56</i>	1 <i>2.37</i>	0 <i>0.42</i>	0 <i>0.98</i>	2 <i>1.67</i>	1 <i>0.56</i>	2 <i>0.98</i>	1 <i>1.26</i>	4 <i>2.37</i>	2 <i>2.09</i>	0 <i>0.56</i>	0 <i>0.42</i>	0 <i>0.42</i>	-	-
Vodafone	7	1 <i>0.65</i>	4 <i>2.77</i>	0 <i>0.49</i>	2 <i>1.14</i>	1 <i>1.95</i>	1 <i>0.65</i>	3 [†] <i>1.14</i>	0 <i>1.47</i>	2 <i>2.77</i>	2 <i>2.44</i>	0 <i>0.65</i>	1 <i>0.49</i>	1 <i>0.49</i>	1 <i>0.98</i>	-
Zain	2	0 <i>0.19</i>	0 <i>0.79</i>	0 <i>0.14</i>	0 <i>0.33</i>	1 <i>0.56</i>	0 <i>0.19</i>	0 <i>0.33</i>	0 <i>0.42</i>	2 <i>0.79</i>	0 <i>0.70</i>	0 <i>0.19</i>	0 <i>0.14</i>	0 <i>0.14</i>	2* <i>0.28</i>	0 <i>0.33</i>

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, one-tailed tests

Table 7. Hypergeometric Analysis for Multimarket Competition in 2014 (expected values italicized) – Indigenous Firms

		Eco	Glo	MTN	Sud
	Countries	7	4	17	3
Econet	7	-	-	-	-
Glo	4	1 <i>1.12</i>	-	-	-
MTN	17	2* <i>4.76</i>	4 <i>2.72</i>	-	-
Smile	3	1 <i>0.84</i>	1 <i>0.48</i>	2 <i>2.04</i>	-
Sudatel	6	0 <i>1.68</i>	1 <i>0.96</i>	4 <i>4.08</i>	0 <i>0.72</i>

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, one-tailed tests