INNOVATION PORTFOLIO MANAGEMENT BY MNC TARGETING EMERGING MARKETS

THE CASE OF A EUROPEAN TELCO OPERATOR IN AFRICA AND THE MIDDLE EAST

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Résumé

The saturation of domestic markets and the emerging markets growth resulted in the expansion of Multinational Corporations towards these markets in which they created subsidiaries without having significant development resources in the given countries. This raises questions regarding the innovative offers these companies should develop regarding the specificities of these markets. These questions will be addressed through the case of a French telco operator (Orange) that targets Africa and the Middle East. Based on the analysis of seven innovations developed and launched in that zone, we highlight the coexistence of three innovation types (global, intermediate and local).

Mots clef: Innovation, Innovation Portfolio, Multinationals, Emerging Markets

Introduction

Research on innovation for and from emerging countries distinguishes between multinational corporations from advanced countries (AMNCs) and those from emerging countries. This communication addresses the practice of innovation of AMNC within the context of emerging markets (EMs). It focuses on one type of AMNCs, specifically those targeting EMs, in order to catch the growth opportunity that these markets represent, whether the majority of their innovation capabilities are located in their domestic sites or in sites located in advanced countries. Indeed, the GDP in BRICS countries, as an example, increased from 1990 to 2010 with an average annual growth of 12%, whereas the annual growth of the USA, EU, and Japan was around 4% for the same period. How can these AMNCs address these promising markets and develop innovations that answer to their specific needs while they have to keep their innovation capacities in developed countries? By addressing these questions, we answer the call of Subramaniam, Ernst, and Dubiel (2015) when they argue that studies should continue to empirically examine the practice of innovation in the EM context, identify new patterns, and theorize their underlying rationale.

The telecommunications industry provides an interesting context for exploring these questions. The deregulation that took place in the late 1990s in France and Europe on one hand, and the technological advances resulting in the emergence of new players on the other, intensified domestic competition. In this extremely competitive context, targeting EMs has become a key strategy. Therefore, we will address this question in the case of a French telco operator (Orange) targeting Africa and the Middle East (AME) region, in which 22 subsidiaries were developed and several products and services offered, providing a particularly interesting research setting. Here again, we intend to answer the call of Subramaniam et al. (2015) when they point out that BRIC nations were highly studied, whereas other markets in regions like Latin America and Africa are understudied and require a stronger research focus. The analysis of the innovation developed by this firm on the AME market (initial target markets, development processes, and subsequent commercialization) brought to light the coexistence of different types of innovation (local, regional, and global). Each type differs by: (i) the development process adopted, in which corporate and local actors play different roles, (ii) the first market targeted, and (iii) the subsequent deployment. This coexistence is rarely analyzed in the existing literature. This study highlights the dynamic aspect of this innovation portfolio: based on information gained through successive commercialization, offers can be adjusted from one type to another.

In the following, we first summarize how literature on international business and innovation management has addressed innovation in general and then innovation by AMNCs in the context of the rise of the emerging economies. We then present the research setting and the seven cases studied. Three cases among the seven are detailed, allowing us to propose a new innovation typology that is then discussed compared to existing literature. Implications on the management of these types of innovations and their dynamics are articulated.

Literature review and research question

For a long time, it has been assumed that innovations were almost always located in the home country of the parent company (Vernon, 1966), and this assumption was not questioned until the end of twentieth century.

Among the first to raise subsidiaries' creative potential, Bartlett & Ghoshal (1986) opened the way to a broad debate beyond the different roles and mandates of these subsidiaries in the

innovation process. This is the acknowledgment of the transnational innovation model (C. Bartlett & Ghoshal, 1989): a multiple home base model where subsidiaries located in different countries "become responsible for the innovation of different products and for different markets" (Ben Mahmoud-Jouini, Burger-Helmchen, Charue-Duboc, & Doz, 2015; p.116). Cantwell (1995) empirically showed the geographical dispersion of the innovations then invalidating Vernon's hypothesis, and Gupta & Govindarajan (1991) listed four different innovator subsidiary's profiles according to the intensity and the direction of knowledge flows within the multinational. Following this conceptual work, Kuemmerle (1997) explained how the knowledge created by the subsidiaries could be transformed into innovative products, then introducing the notion of a global R&D network.

From this point, subsidiaries were seen as potential creative instances in terms of technological advancements, but also market opportunities (Birkinshaw & Fry, 1998; Birkinshaw & Hood, 1998; Cantwell & Mudambi, 2005). An extensive literature in international business has been developed in an attempt to identify and better understand the antecedents of the subsidiary's market and innovative performances, always considering the overall performance of the multinational as a network of entities. Three major axes of research were developed. The headquarters-subsidiary relationship has been examined in terms of knowledge flows, more precisely by identifying the antecedents for increasing knowledge flows within the multinational network, thereby enhancing the overall performance of the multinational (Gupta & Govindarajan, 2000; Phene & Almeida, 2008; Zhou & Li, 2012). Power bargaining and the way knowledge retention could leverage a subsidiary's influence over resource allocation or strategic decisions have also been studied (Andersson, Forsgren, & Holm, 2007; Mudambi & Navarra, 2004; Mudambi, Pedersen, & Andersson, 2014). Finally, the capability development through external but also internal—dual—embeddedness of the subsidiary (Andersson, Forsgren, & Holm, 2002; Birkinshaw, 1997; Ciabuschi, Dellestrand, & Martín, 2011; Figueiredo, 2011; Meyer, Mudambi, & Narula, 2011) has been of interest recently.

Concurrent to these streams of research, further literature in innovation management emerged to analyze the drivers of R&D internationalization (Håkanson & Nobel, 1993; Håkanson & Zander, 1988; Kumar, 2013; Le Bas & Sierra, 2002) and the different patterns of managing it (von Zedtwitz & Gassmann, 2002; von Zedtwitz, Gassmann, & Boutellier, 2004). Different archetypes of R&D internationalization were defined regarding the development or dispersion of the R&D, as well as of the market or technology orientation of the subsidiary mandate.

All this literature in international business and innovation management has been developed in the idea that to be effective, the multinational corporation should find a balance between local responsiveness and global integration (Bartlett & Ghoshal, 1989). In that sense, knowledge transfer, power bargaining, dual embededdness, and, more strategically speaking, the R&D organization in these different contexts could potentially foster or hinder the equilibrium between local and global innovation. In the end, innovations were coined either as local or global.

More importantly, this literature was exclusively developed in the context of AMs where innovation resources, as well as innovation processes, although being shared between headquarters and subsidiaries, were exclusively located and executed in the advanced markets context (encompassing the United States, Western Europe, and Japan, and called the Triad or "the North").

However, the rise of EMs as players in "extant global R&D networks, as centers for development of new business models and as sources of groundbreaking yet frugal innovations" (Mudambi, 2011; p.317) drastically changed the rules of the game. These regions of the world are fast growing (Haour & von Zedtwitz, 2016; UNCTAD, 2015) and developing successful innovations for these markets, but while the majority of the innovation capacity is still located in AMs, this forces a reconsideration of theories and models previously established (Govindarajan & Ramamurti, 2011).

Indeed, EMs are characterized by fundamentally different constraints (Govindarajan & Trimble, 2012a; Mudambi, 2011) to which multinationals, and especially AMNCs, are unaccustomed. Those constraints include (Govindarajan & Trimble, 2012b) (1) a price-performance sensitivity that implies conquering these markets by developing less expensive, albeit not low-cost, products with new and adapted functionalities, (2) a potential lack of infrastructure such as unreliable electric power, (3) an exacerbated sustainability awareness due to high levels of pollution often observed in the urban areas, (4) a sometimes important gap between EMs and AMs regulations (this gap can be an innovation catalyst but also a serious ethical issue), and (5) a difference in preference that refers to a diversity in tastes, habits, and rituals.

In terms of international business research, there is a call for revisiting existing models and theories regarding the headquarters-subsidiary dyad relationship, the subsidiary mandates, and the multiple embededdness of the subsidiary (Mudambi, 2011) in order to reconceptualize our understanding of the contemporary multinational. Recent papers have started to rethink existing models regarding the hierarchy (Nell, Kappen, & Laamanen, 2017; A. P. J. Schotter, Stallkamp, & Pinkham, 2017) and coordination of the multinational (Birkinshaw, Ambos, & Bouquet, 2017; Kane & Levina, 2017; A. Schotter & Beamish, 2011; Tippmann, Sharkey Scott, & Parker, 2017). They claim that the multinational should now become a multihub where headquarters are disaggregated and geographically dispersed, moving towards a *hetarchy*. Then, the innovation-integration dilemma, especially prevalent in the EM context, could be attenuated by boundary spanning activities (e.g. specific activities or individuals that mediate internal flow of information) that will enhance the effectiveness of internal and external networks.

In terms of innovation management, three major research perspectives regarding AMNCs innovating in EM contexts have been developed. The first perspective focuses on an adaptation model that attempts to moderate the tension between economies of global scale and the advantages of local market demand. In order to face EM constraints while taking advantage of the market opportunities, AMNCs tried the glocalization model. It combines the best of globalization and localization: multinationals develop products at home for their markets and then adapt them to local markets and needs, usually less sophisticated (Bartlett & Ghoshal, 1988; Ghemawat, 2007; Prahalad & Doz, 1987). However, this adaptation can be costly and does not answer in some cases to the specific characteristics of EMs, such as sociopolitical governance, shortage of resources, or inadequate infrastructures (Immelt, Govindarajan, & Trimble, 2009).

A second perspective focuses on the disruptive nature of emerging markets compared to advanced ones, thus requiring the adoption of specific approaches and innovation processes, such as in the case of disruptive innovation, as highlighted by Christensen (Christensen, 1997; Christensen & Bower, 1995). Therefore, Hart and Christensen (2002) applied the disruptive innovation framework to new products developed for and within EMs. Halme, Lindeman, and Linna (2012) suggested a model that highlights the utilization of the means at hand,

considering the resourcefulness as a mindset: such an intrapreneurial bricolage approach helps to develop innovations tailored to the needs of EMs. Many other approaches claimed the redesigning of the new product development (NPD) process starting with the constraints of EMs and their specific needs (Prahalad, 2004; Prahalad & Mashelkar, 2010; Zeng & Williamson, 2007; Zeschky, Widenmayer, & Gassmann, 2011; etc. See von Zedtwitz, Corsi, Soberg, & Frega, 2015 for an exhaustive and documented review). What differentiate these approaches are the resources and competencies involved in these developments: they originated in AMs, Ems, or a mix of both, and they co-located in EMs or were distributed between AMs and EMs. As an example, Govindarajan and Ramamurti (2011) characterized the organizational strategy adopted by GE to develop disruptive innovation in China as 'local growth teams' (LGTs). These autonomous units, formed locally to address this market, have their own profit and loss responsibility and recruit local resources for product development, sourcing, and marketing. In the same vein, Midler (2013) studied a different organizational strategy adopted by Renault to develop a specific vehicle called "the Logan" targeting the needs of East European markets, Romania specifically. He showed that Renault dedicated a team composed of knowledgeable players (experts and designers) coming from the corporate R&D facilities but co-located within the targeted market and near the manufacturing facilities that will produce the product.

A third perspective of the research on AMNCs innovating in an EM context, tightly linked to the previous ones, focuses on the transfer of innovations from EMs, where they were primary commercialized, to AMs, where they are subsequently introduced. This perspective was identified as reverse innovation in the sense that the innovation is introduced in an EM first before being introduced in an AM later, highlighting the gap in Vernon's life cycle and internationalization model as a reference paradigm (Immelt et al., 2009). Antecedents of reverse innovation have been identified (Borini, de Miranda Oliveira, Silveira, & de Oliveira Concer, 2012; Zeschky, Widenmayer, & Gassmann, 2014) and the challenges encountered by AMNCs transferring EM innovations to AMs have also recently been studied (Hadengue, De Marcellis-Warin, von Zedtwitz, & Warin, 2017; Winter & Govindarajan, 2015).

Table 1: Main contributions of each literature stream regarding the multinational activities in terms of innovation in the context of the rise of EMs

Contributions of the IB Literature	**Contributions of the Innovation Management Literature**
The multinational as a multihub / hetarchy, geographically dispersed to catch EM opportunities	The model of glocalization (adapting AM innovations to EM contexts, degraded solutions)
Boundary spanning activities as facilitators of information/knowledge flows within the multinational network	Specific approaches (in terms of team management) to develop innovations in and for EMs
	The facilitators to transfer EM innovations to AMs

It is clear from the literature that only two types of innovations are today considered in the context of AMNCs innovating for EMs: (1) innovations developed for AMs that are

subsequently adapted in accordance with EMs constraints (low price, lack of infrastructure, etc.), i.e. glocalization, and (2) innovations specifically developed for EMs that could, in a second time, potentially be transferred in AMs (reverse innovation). As the former type has been identified as ineffective (Immelt et al., 2009), it left us with the second type: to innovate for EMs.

But, despite the richness of the approaches, neither of the two streams of research (international business and innovation management) detailed here, has yet been interested in the nature of these innovations. Whereas the international business literature tends to study the fundamentals of organizational configurations that will optimize global innovation (understood as the balance between local responsiveness and global integration), the innovation management community has not yet clearly specified the different types of innovations that AMNCs could develop in EM contexts. In other words, no clear definition yet exists of the innovation portfolio that could and should be developed in a context where an AMNC harnesses the growth opportunity of EMs while the majority of its innovation capabilities remain in AMs.

We then propose to enlarge this current discussion by looking at a set of innovations developed by an AMNC in EMs. Attempting to answer the call by Subramaniam, Ernst, and Dubiel (2015) for "cross-level studies, in order to have a better empirical assessment of the underlying mechanisms by which specific characteristics of an EM impact the innovation activities at other levels, especially the firm, the project, and the individual level," we then propose to ask the following question: in the specific case of AMNCs intending to develop innovations for EMs while the majority of their innovation capabilities are in their domestic markets, which types of innovation are developed? Following which processes? What are the respective roles of central and local players in these processes?

This allows us to identify three types of innovations: local, global and intermediate. If the two former types are more intuitive, the last one is a more in-between, dynamic form of EM innovation that involves both central and local units and that could potentially facilitate the transfer and the valorization of the innovation in AMs. We propose that the two traditional types of innovation combined with this new *intermediate* form compose the typical innovation portfolio of an AMNC targeting EMs.

Methodology

To examine these research questions, we adopted a case study approach (Eisenhardt, 1989). This methodology allows us to deeply analyze 7 innovations developed by the French telco operator Orange and related, from one extent or another, to the EM context, more especially the Africa & Middle East zone (AME).

Moreover, our rich set of data gives interesting insights regarding the management of the different innovations identified. This allows us to propose typical processes for each of the innovation types, more precisely to clarify the role of each player at both corporate and local levels. Our research setting and data collection are exposed above.

Research setting

As mentioned in the introduction, we analyzed the case of a French telco operator (Orange) that faces intense competition in developed countries and especially in its domestic market, and that adopted an internationalization strategy in AME. In 2012, France represented 47% of

sales, ahead of Poland and Spain, the two most significant foreign markets, which represented 17% of sales. AME represented 10% with 22 subsidiaries. The turnover in this zone increased by 35% between 2008 and 2012, with the largest Orange subsidiary, Mobinil in Egypt, having more clients than the French one, despite France hosting 52% of the resources against 12% in AME. This growth was achieved by the distribution of products already developed and deployed in Europe, as well as through specific offers developed for the zone, such as *Orange Money*, a mobile payment service that will be analyzed later. What is important to notice is that the AME region presents common characteristics, such as a mainly rural population with underdeveloped transportation infrastructure, a low GDP per capita, a young population, and a small middle class. To respond to these common characteristics, specific offers were developed such as *Emergency Credit*, which allowed access to additional communication minutes when no credit is left, which are then charged the next time minutes are recharged. At the same time, however, there are huge disparities in the size, maturity, and evolution of the market. The second subsidiary in Mali has a fifth of the turnover of the largest one in Egypt. Mobile penetration rates vary considerably from 130% for Botswana or Jordan (reflecting the multi-device phenomenon) to less than 30% for Niger. Annual turnover growth rates vary from 35% in Mali compared to 10% in Jordan. Finally, competitive pressure differs greatly depending on whether the subsidiary is the leader or challenger in the market.

Orange BtoC activities are organized into regions. Subsidiaries in a given region report to the regional managers (strategy, finance, HR, etc.), whose main missions are to assist the subsidiaries in commercial development for their activity and implement operational cost-cutting programs. Each region manages its own budget. Regional managers are members of the Innovation Committee, charged with allocating the budget for product development. Ideas of new offers are collected from subsidiaries by a centralized service depending on the corporate global R&D department. This service organizes the Innovation Committee to which subsidiary CEOs and marketing directors take part. A vote is held, and selected offers are then chosen by the Innovation Committee. These priority offers are developed centrally and have to be deployed by the subsidiaries because of their (i) ability to generate income directly or indirectly, (ii) role as key differentiators, (iii) contribution to the brand, and (iv) contribution to the development of a new strategic field for the group. Although not directly responsible for innovations, regions are involved through their directors in the choice of innovations that will be developed centrally. These offers are developed by centralized laboratories located either in advanced or emerging countries. However, the majority of these resources are situated in France. Subsidiaries have generally few resources available for innovation. However, they may work with local partners to respond to their specific short term needs. Otherwise, subsidiaries are frequently in need of innovation adapted to their specific market.

Data collection and analysis

The seven case studies analyzed take place in the same company, in accordance with Yin (2003), in order to control external variables and focus on the variables that characterize the specific phenomenon being studied. As presented above, the chosen company is well-suited to a theoretical sampling, as it represents a case that is emblematic or illustrative (Yin, 2003). The studies were identified after a first series of interviews with actors at the corporate level who had a global vision of innovations that the company had commercialized in the AME zone. We opted for past innovations to analyze the overall innovation process, including

development and deployment, and relatively recent ones to be able to interview the players involved. The following choice criteria of the cases were adopted: origin of the innovation, deployment scale, and priority accorded to the innovation. The seven innovations are *Caller Ring Back Tones, Cattle Tracking, Emergency Credit, Orange Money, Livebox, Village Phone,* and the *Voice Mail Improvement Program*.

Data on the innovations was collected primarily through semi-structured interviews by following an analysis grid based on the conceptual framework proposed by Clark and Wheelwright (1993) on the four development stages of an innovation. The deployment of the innovation refers to the subsequent market introductions implemented by the subsidiaries. A total of 60 semi-structured interviews, lasting approximately 90 minutes each, were conducted with the main actors involved on the corporate level (research laboratories, marketing and development resources, implementation, etc.), and in subsidiaries that commercialized the innovations (CEO, CMO, business developer, etc.).

Fifteen subsidiaries in the zone were investigated. Reports from the interviews were systematically sent to interviewees for validation. The data collection process lasted two years. It included the collection of all types of available documents related to relations between headquarters and subsidiaries (markets & segments, product target areas, financial targets, technical studies, technical specifications, contracts with suppliers, strategic priorities, etc.). Case studies were established for each instance, shared with the interviewees and discussed within a committee set up for the research involving the director of the zone in charge of the roadmap subsidiaries, the director of the international R&D laboratories, and the head of the innovation processes organization. The seven case studies were then cross-analyzed, revealing three different types of innovation that were then characterized. These included the global and local types, but also a new one that we call intermediate innovation. This characterization was discussed during meetings of the aforementioned research committee.

The following table gives more details regarding the interviewees and their location.

Table 2: Interviewees and their locations at the time.

Orange	Location	Number of interviews
AME Subsidiaries	Botswana	4
	Egypt	1
	Ivory Cost	1
	Mali	1
	Morocco	3
	Niger	2
	Senegal	3
	Tunisia	2
AME Center (Global Direction)	AME Zone	8
Europe Direction	France	1
Orange Labs Networks and Carriers	Egypt, India, Japan, Poland, Romania, Tunisia	14
Marketing and Innovation Group	France	2
Information System	AME Zone	4
Technocenters	France	5
	UK	2
	Jordan	5
Design & User Experience	France	2
		Total: 60

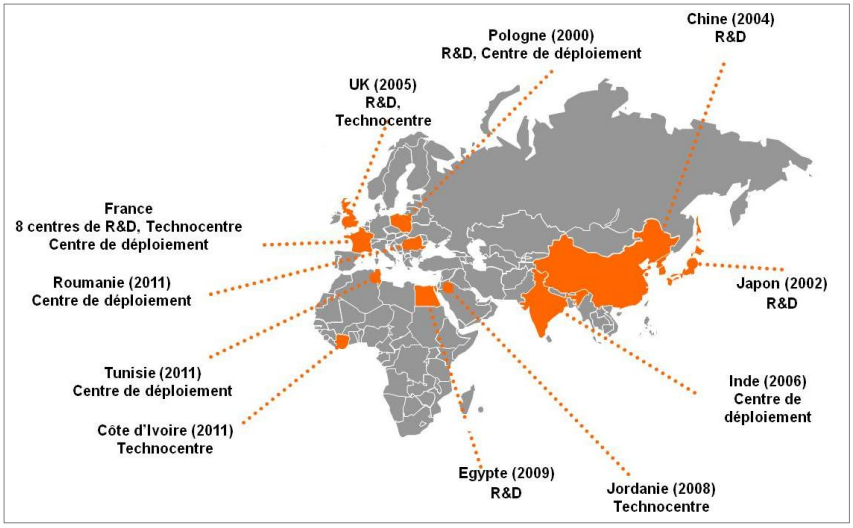

Figure 1: Innovation centers at Orange

This method does, however, present the following limitations: while innovations are recent, analysis is based on a posteriori data and it was not always possible to obtain the necessary quantitative data. This bias was partly addressed by the plurality of actors interviewed and involved in the innovation allowing data triangulation and by the fact that the research committee members knew these innovations, and could provide critical perspective.

Three innovation case studies

Over the 7 cases, three are detailed here (*Caller Ring Back Tones*, *Orange Money* and *Cattle Tracking*), each of one representing one the innovation types characterized later on.

Caller Ring Back Tones (CRBT)

CRBT is a service that allows the personalization of ringtones that callers hear. Orange launched this service in Europe in 2005 with limited success. In the beginning of 2006, a team was created to launch the service in AME. The project team consulted with subsidiaries to define aggregate needs before making major technical decisions. Cameroon volunteered as the pilot country. In 2010, the service had been integrated among the *priority* projects for the zone. The service components are standardized. The main adaptation of the offer for each country is the selection of ringtones that are chosen by the subsidiaries and bought from local suppliers. The offer was developed centrally (marketing, technology, purchasing, etc.) and members from the corporate R&D labs in Cairo and Poland took part in the development project. The only costs incurred by the subsidiaries are market analysis costs and operational costs for the launch and the maintenance. Before launching the service in a country, the central technical project manager consults with his local counterpart to define specifications of interfaces with the procurement process and invoicing. Once the project is launched, the local expert manages the operational platform maintenance. The marketing campaigns for the launch are elaborated and executed locally by the subsidiaries that adjust pricing, billing frequency, and messages communicated to clients. Experience gained during the initial launch of CRBT in Europe was helpful in the choice of the platform suppliers and the business model. After 16 launches in 2011, the central marketing project manager formalized

the best practices and the lessons learned. He organizes a monthly meeting with local correspondents.

Orange Money

Orange Money is a service that allows clients to transfer money and make payments (electricity bills, etc.) using their mobile phone. Due to a low penetration rate of bank accounts (less than 10% in sub-Saharan Africa), and a high penetration rate of mobile phone in the zone (approximately 60%), several subsidiaries could potentially be interested in this innovation. Furthermore, a mobile payment service could build customer loyalty, as 95% use are clients of several providers. The main offer comprises four services: money transfers, cash withdrawal and deposit, bill payment, and refill of telephone call credit. The development and deployment of the offer require the creation of an ecosystem with local financial and commercial partners, willing to accept this form of payment. It requires as well agreement with local bank authorities. Subsidiaries were extensively involved in these tasks.

The project first began in 2006, when a centralized marketing team was created to identify opportunities for a contactless payment service. Following discussions with subsidiaries in AME, the team identified the concept of a mobile payment service. A centralized project team was then formed. A few months later, in 2007, Safaricom (Vodafone subsidiary) launched the same service (M-Pesa) in Kenya. In 2011, this service reached 32 million transactions and a value of €695 million, with 14 million users (40% of the population). It served as a benchmark for *Orange Money*. The team carried out initial investigations that revealed a need for a platform, security controls in order to prevent fraud and money laundering, and specific authorizations from the local financial regulator. The team initiated negotiation with the Central Bank of the West African States. The development of a new infrastructure required functional specifications and the specification of the interface with existing information systems, both locally and globally. Subsidiaries participated by informing sending their requirements to the project manager. The first launch was in Ivory Coast in December 2008, and the second in Senegal in May 2010. The majority of the difficulties encountered was related to the platform architecture, and were therefore solved by the centralized team. For the first launches the platform was installed by local teams with centralized support. In order to reduce costs and launch in countries where local resources were limited, a shared infrastructure was installed in France and remotely managed from Romania. The launch in Niger in June 2010 benefited from this system. Parameters and security tests can be set remotely. Thus, the local teams had few involvements in the technical running. A skills center was created in Bamako in 2008 to share and train local teams in negotiating with local partners, as well as controls and reporting to banks.

During its development, the project benefited from the support of several corporate sponsors that brought visibility to the project and mobilized the resources necessary to make progress during critical stages.

A process was established for successive launches: once the decision is made to launch the service, a local project manager is appointed. He reports to the subsidiary CEO and works with the centralized team. He established a local distribution network (bank partners, Orange retail stores, authorized Orange distributors, such as vendors and pharmacies, etc) and executes the operational marketing campaign. After the service was launched in 6 countries, the project entered a second phase of improving the offer. In this second phase, the subsidiaries were consulted to identify new services that could potentially be launched. The

final decisions were made at the corporate level favoring services that were likely to interest the widest range of countries

In 2012, *Orange Money* registered 5 million subscribers in 10 countries and was considered as a priority innovation. The goal was to launch it in all AME countries and reach 30 million subscribers. Several complementary services were developed. In November 2013, the CEO cited mobile payment as a strategic focus beyond AME zone. In 2015, it was launched in Poland and will launched in France.

Cattle tracking

Cattle tracking consists in attaching a specialized tag to an animal enabling its tracking reducing the risk of theft or loss of animals with a high market value. The targeted market was cattle farmers on large lands. The subsidiary in Botswana saw an opportunity in offering very wide coverage. The subsidiary developed the offer in 2011 and covered the costs. The challenge was to find a battery with a very long run-time length. The local team established a partnership with a local research center that could develop the tag. Due to governance problems, the research center withdrew from the project. The subsidiary received assistance from a small corporate team responsible for local innovation support. It was composed of two players who drew on their own networks to negotiate for expertise and resources if necessary. They identified an expert to resolve network problems. However, the project was not able to benefit from additional central resources. The subsidiary was faced with difficulties that it was unable to handle and stopped the project. Independently an offer of a connected tag for domestic animals was developed by Orange in 2015 in France and encountered a commercial success.

Table 3: Key players involved in each innovation.

	CRBT	**Orange Money**	**Cattle Tracking**
Group Players	• Project managers (technical and marketing) • R&D members (Poland, Egypt) • Purchasing • Global supplier for technical platform	• The project team, • Sponsors, • R&D members, • The skills center created in Mali in 2008 • Global hardware suppliers for technical platforms.	• Orange Labs expert to resolve network problems • A small corporate team for the support of local innovation in the zone.
Local Players	• Commercial and technical correspondents in 16 countries, in charge of ringtone selection, market introduction and operational maintenance.	• Subsidiary top management • Local project managers (technical, marketing, etc.). • Local suppliers (in particular to develop additional services) • Local partners: banks, money transfer companies, pharmacies, vendors, Orange retail stores, public utilities (water, electricity), television channels, etc.	• Local subsidiary management

Proposed innovation typology for emerging markets

The 7 analyzed cases, of which 3 examples were detailed above, led us to distinguish three different types of innovations: global, regional, and local.

Global innovation

The global innovation is characterized by a centralized initiation and development with minimal involvement of teams located within EMs. It is a standardized offer with very few local adaptation developed for EMs, thus addressing a common need of a large geographical zone. This is the case for the *CRBT* innovation as well as for the Voicemail Improvement Program or the Livebox offer. It can be as well the deployment of an existing innovation already commercialized in domestic or other advanced markets. The offer is based on a set of specifications defined ex-ante at the corporate level.

Local teams are marginally involved in the specifications definition. The centralized team is involved in the technical development as well as in designing the customer experience. Global suppliers are selected and global infrastructure is established in order to reach economies of scale. There is as well a learning effect considering the large number of countries in which the offer is launched. This significant central investment is absorbed by the large number of subsidiaries in which the innovation is commercialized. Incentives are put in place to ensure that the subsidiary adopts and commercializes the innovation.

Subsidiary takes in charge the operational marketing required for commercialization. At the most, it includes minor adaptations of the offer, without modifying the initial concept (ringtones, local language, etc.). From a financial standpoint, the subsidiary's commitment is limited to the time spent by local teams on the project, and purchasing equipment for roll-out (IS platforms, local content, and marketing material). This type of innovation corresponds to the "centralized hub" model of Bartlett and Goshal (1989).

Intermediate innovation

The intermadiate innovation is characterized by a centralized development with a significant involvement of the EM subsidiary, especially for parts that can't be developed remotely such as developing partnerships necessary for the design and the delivery of the service. *Orange Money* is an example of this type, as well as Emergency Credit or Community Phone. The corporate team develops the core technical parts and the standard customer experience. It establishes launch procedures for each country with the help and insight of each of them.

The subsidiaries finance the development of complementary modules, in addition to their participation in the corporate development investments. Subsidiaries are billed for the development investments but not at the actual marginal cost. Subsidiary contribution is calculated based on the monthly income generated per innovation and per client, and using a moderating coefficient to account for local purchasing power and the financial capacity of the subsidiary. This funding method represents a major difference between global and intermediate innovations.

The intermediate innovation targets needs shared by several subsidiaries. At times this same need appears later in the home country. Once the development process has been completed, the offer can be easily proposed in both EMs and AMs. *Orange Money* is an example of this situation, which was extended to other African subsidiaries than those originally concerned

by the innovation. Due to the recent development of mobile banking, the innovation was also transfer to Poland and France, thus having the characteristics of a reverse innovation.

The “Transnational” model of Bartlett and Goshal (1989) seems to favor this type of innovation in which a balance is achieved between local responsiveness and global integration.

Local innovation

In the case of the local innovation, centralized teams are involved only marginally, or not at all, in local innovations. The subsidiary is responsible for the identification, the development and the commercialization, and outsources locally when needed. The subsidiary is also fully responsible for providing funding. The *Cattle Tracking*, is an example of this innovation type

The need met by the subsidiary is initially analyzed as being unique to the country. An example is the unique combination of the geography of the country, making it difficult to control cattle, coupled with the high market value of cattle, or a high theft rate. As for the intermediate innovation, once the offer is finalized and commercialized, it may potentially interest other subsidiaries. However, the offer will be necessarily more difficult to transfer because of the lack of involvement of more central players: the specificity of the offer makes it difficult to adapt it. This type of innovation corresponds to the “decentralized federation” model of Bartlett and Goshal (1989).

The following table summarizes the main characteristics of these three innovation types.

Table 4: Characteristics of three types of innovations regarding central and local involvement

		Global innovation CRBT, Voicemail Improvment Program, Livebox Offer	**Intermediate innovation** Orange Money, Emergency Credit, Community Phone	**Local innovation** Cattle Tracking
Central/Corporate involvement	Design/Development	• Strong: Centralized team dedicated to develop the overall offer	• Strong: Centralized team dedicated to develop the core part of the offer and the standard customer experience	• Low or null
	Distribution	• Widespread distribution planned centrally • Central marketing • Creation of a dedicated centralized team	• Strong: The centralized team established the launch procedure	• Low or null
	Funding	• Strong participation	• Strong: for the core part of the offer	• Low or null
Local involvement	Design/Development	• Marginal: market analysis	• Strong: market analysis, local parts development (offer, distribution), designing and executing marketing campaign, • Further development	• Strong: local identification and development of the offer with internal but also external players
	Distribution	• Marginal product adaptation	• Strong: Helped the centralized team in designing each launch procedure	• Strong: local market introduction

Discussion and conclusion

The analysis highlights two understudied phenomenon: the coexistence of different innovation types commercialized by an AMNC in EMs and the dynamic management of this portfolio.

As Vernon (1966) did previously, von Zedtwitz et al. (2015) pointed out four different temporal markers in the innovation process: the ideation, the development, the primary and the secondary market introduction in order to offer a wide framework. In the specific case of Reverse Innovation, the second market introduction is the advanced country. We suggest introducing other market introduction steps in order to highlight the deployment of an innovation within a specific region such as in EM, for example. Indeed, Subramanian et al. (2015) highlighted that emerging markets are not a homogenous construct and that reverse innovation research opposed emerging to advanced markets whereas many nuances exist within the EM construct. The case of AME shows this diversity between the countries and thus the specificity of an innovation life cycle within the region before a potential transfer in advanced countries. We argue that the literature rarely addresses the differences between the subsidiaries and the impact this variety can have on the trajectory of an innovation and the deployment process. Von Zedtwitz et al. (2015) call for a tertiary market introduction. We agree on this idea and pursue it. By adopting von Zedtwitz et al. (2015) framework, the innovation typology proposed can be presented in the table 3.

Table 5: Innovation typology in von Zedtwitz et al. (2015) framework

	Ideation	**Development**	**1st mrkt launch**	**2nd mkt launch**	**3rd mkt launch**	**(….)**	**nth mkt launch**
Global innovation	E or A	A	E1 or A	E2	E3	Ei	En
Intermediate innovation	E	A and E	E1	E2	E3	Ei	En or A
Local innovation	E	E	E1	?	?	?	En or A

E: Emerging market, A: Advanced market

In the case of global innovation that we highlight, it is developed specifically for emerging markets. The difference between regional and local innovation lies in the scope of the primary market targeted during the development of the innovation and the respective role of the corporate and the local team in this development. These differences impact of course the business plan of the innovation as well.

We highlighted the coexistence of three types of innovation, the challenge being to balance and combine these three types that are favored by distinct organizational models. Literature in international business rarely addresses the links between the subsidiaries relationship with the headquarters and the nature of innovations developed and commercialized by the subsidiaries. This aspect is addressed by research on reverse innovation, which deals specifically with innovations launched initially for EMs and subsequently commercialized in AMs. And when it is addressed, this literature emphasizes pure models, such as the Local Growth Team for local innovation, favoring thus only one innovation type.

Besides highlighting the coexistence of different innovation types, we emphasize the dynamics between the three categories because the scope of the market cannot usually be forecasted accurately. Subramanian et al. (2015) pointed out that although the reverse innovation phenomenon became popular, it would be useful to further investigate if and how the subsequent transfer of innovations from EMs to AMs should be built into the initial development process. We argue that for the subsequent transfer to be considered during the NPD process, the first step is to recognize the distinctiveness of different innovation categories. Next, specific and adapted processes to each innovation type must be established. Finally, the transfer of an innovation from one type to another should be possible if initial commercialization and the resulted learning reveal new opportunities requiring a dynamic portfolio management.

This phenomenon is linked to the irreducible unpredictability of a given innovation's potential and capacity to appeal to markets with varying degrees of importance. Faced with this uncertainty, managerial choices are made based on information that is accessible at the development and the launch of the product. This information leads to the identification of the target market, the planning of commercialization at a local, regional, or global level, and the choice of a suitable development process. The challenge faced by the company is then to adjust the segmentation and deployment scale based on market reactions, thus enabling innovations that were designed for one EM local context to become suitable for multiples EMs or even AMs, whereas the optimal development process for each of these commercialization scales are different. After initial commercialization, the ability to react and adapt is crucial, and must be based on how the market receives the innovation, and the significance of the innovation for other subsidiaries. It is this ability to react, to market response that led to the successful distribution of the Logan (Midler. 2013) in a much larger market than initially intended.

The question of procedures for reactivity and transformation is therefore crucial. The challenges mentioned in mobilizing central resources to develop intermediate innovations leads us to highlight the imbalances that can exist between subsidiaries, based on the size of respective markets and gaps between high-growth countries, and those in which the company has been long established. Work on reverse innovation brings to light the need to establish specific frameworks so that new markets, whose size is initially difficult to ascertain, but that represent an opportunity for renewed strategic positioning for the firm, can benefit from the company's central development forces and centers of excellence.

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