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HR practices for explorative and exploitative alliances in smart cities

Evidences from smart city managers' perspective

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Abstract

Purpose – The purpose of this paper is to investigate how multinational enterprises (MNEs) manage human resources (HR) in explorative and exploitative alliances in smart city projects (SCPs).

Design/methodology/approach – In this paper, the authors adopt an explorative and qualitative approach based on multiple case studies thanks to the interviews with 21 smart city managers of MNEs who are deeply involved in SCPs.

Findings – The authors found that MNEs use many different partnerships and “temporal separation” in many cities all around the world in order to maximize the benefits of both exploration and exploitation. According to the aim of the project, MNEs implemented different HR practices intentionally targeted toward managing social relations among internal and external employees involved in SCPs.

Practical implications – The authors highlighted that MNEs tend to develop different ties among employees and external partners and to use different HR practices according to the nature and to the aim of the alliances. Thus, the development of human resource management systems becomes crucial in supporting organizational ambidexterity through alliances.

Social implications – This paper gives useful insights in improving the effectiveness of MNEs in SCPs. Due to the business opportunities arising from the application of ICT and technological innovation to urban services, MNEs are becoming an important player in smart cities. Increasing the effectiveness of the SCPs leads faster to more economically, socially and environmentally sustainable cities.

Originality/value – The development of alliances has a key role in strengthening and complementing firms' exploration and exploitation agendas in SCPs. Thus, this paper provides guidelines to MNEs in order to adapt HR practices and to rethink the role of HR within and across corporate boundaries in an emergent context of analysis.

Keywords HRM, Alliances, Exploration, Exploitation, Smart city, Ambidexterity

Paper type Research paper

1. Introduction

Dealing with the tension between explorative and exploitative activities is a key issue for firms, especially for multinational enterprises (MNEs) (Birkinshaw and Gupta, 2013). Literature suggests that ambidexterity allows firms to manage this issue properly (Gibson and Birkinshaw, 2004) and provides firms with specific competitive advantages (Junni *et al.*, 2013; Ferraris, 2014). However, usually achieving ambidexterity is difficult and risky because firms



do not manage explorative and exploitative activities properly and because they do not have resources and competencies to do that steadily (Simsek, 2009; Prieto *et al.*, 2009; Adler and Heckscher, 2013). In such a case, ambidexterity might be more successful if developed through alliances and networks (Kang *et al.*, 2007; Vrontis *et al.*, 2017).

In this guise, looking at literature on open innovation and alliances, inter-organizational linkages play a key role in strengthening and complementing firms' exploration and exploitation agendas (Carayannis and Campbell, 2009; Mortara and Minshall, 2011; Santoro, 2017; Vrontis *et al.*, 2017). Furthermore, open innovation literature stressed the importance of the so-called coupled model that allows firms to co-operate with other organizations in strategic networks combining knowledge acquisition processes (exploration) with knowledge transfer processes (exploitation) (Gassmann and Enkel, 2004; Chesbrough *et al.*, 2014). As a result, firms that manage the tradeoff between exploration and exploitation while being engaged in alliances achieve higher performance (Lavie and Rosenkopf, 2006; Lavie *et al.*, 2011; Vrontis *et al.*, 2017).

The management of exploration and exploitation has been deeply studied in several papers (Augier and Thanning Vendelø, 1999; Lavie *et al.*, 2010), but from the existent literature, it emerges a lack of studies regarding a recent context of analysis, the smart city one (a notable exception is Ferraris, Erhardt and Bresciani, 2017) considered a great locus of innovation where firms establish alliances to test new business models and technologies (Hollands, 2008; Paskaleva, 2011; Tardivo *et al.*, 2017). Consequently, the concept of "smart city" has become quite popular between scholars and practitioners (Dvir and Pasher, 2004; Komminos, 2008; Yigitcanlar *et al.*, 2008). Firms need the cooperation with different city's stakeholders and the support of local governments to develop exploration and exploitation activities in smart cities (Sandulli *et al.*, 2017; Carayannis and Alexander, 1999). The development and commercialization of new "smart" technologies, the collaboration with public partners, the co-creation with other city's partners and the needs to invent new services for citizens make these projects very different from classical firm's innovation alliances, and lead MNEs to rethink their strategies and approaches. Therefore, external partners involved in these projects (local governments, other firms, universities, citizens, etc.) can contribute to both firm's exploration and exploitation activities, fostering the development of innovative solutions.

However, dealing with explorative and exploitative alliances in smart cities is not an easy task. This paper propose that a key enabling factor regards human resource management (HRM), namely all the decisions made by the management of a firm that affect the relationship between the firm and its employees (Beer, 1984; Soliman and Spooner, 2000; Bresciani *et al.*, 2012). In particular, HRM and its relative practices and configurations need to be adapted to manage heterogeneous forms of alliances (Ferraris, Erhardt and Bresciani, 2017). Notwithstanding, the importance of HRM has been long time neglected in the open innovation and alliances landscape (Bogers *et al.*, 2018). This is rather surprisingly given that, when open innovation modes are established, employees are called to search and manage external knowledge in both exploration and exploitation phases (Kang *et al.*, 2007; Bogers *et al.*, 2017). This is because alliances and external knowledge sourcing provoke internal tensions requiring HRM efforts (Campanella *et al.*, 2016).

Therefore, this paper has the purpose of understanding the role of HRM in explorative and exploitative alliances in smart city projects (SCPs) by addressing the following research question:

RQ1. How MNEs manage human resources (HR) in explorative and exploitative alliances in SCPs?

The research has been structured in the following sections: Section 2 is based on the analysis of the theoretical background concerning the balance of exploration and exploitation through alliances in smart cities and the related HR practices. Section 3

provides a multiple case study analysis regarding seven MNEs operating in SCPs. Then, Section 4 proposes the analysis of the results in relation to the research question while Section 5 discusses our results and offers some conclusions, implications and future research works.

2. Theoretical background

Managing exploration and exploitation through alliances

Literature indicates that firms have to maintain an appropriate balance between exploration and exploitation to compete (March, 1991). This balance has been described as “ambidexterity” in literature and several studies posed a positive relationship between ambidextrous approaches and several outcomes (Kauppila, 2010). However, ambidextrous firms face issues, barriers and challenges (Adler and Heckscher, 2013), and therefore, they must choose between an explorative and exploitative strategy (Gupta *et al.*, 2006). Others suggest that exploration and exploitation can be achieved together and fostered through alliances and inter-organizational ties (Kang *et al.*, 2007; Kauppila, 2010). In this sense, some scholars from the alliances and open innovation literature found that external partners play a critical role in complementing and strengthening firms’ exploration and exploitation activities (Baum *et al.*, 2000; Hoffmann, 2007; Vrontis *et al.*, 2017). More specifically, a balanced scanning of external sources of knowledge can enhance both internal efficiency (exploitation) and the firm’s ability to recognize opportunities and technological trajectories (exploration) (Rothaermel and Alexandre, 2009). This is because both exploitation and exploration involve accessing different knowledge-based sources and establishing different kinds of collaborative ties (Li *et al.*, 2008). In fact, on the one side, explorative alliances are usually established to explore new technological opportunities (technology search). By contrast, exploitative alliances have the objective to use complementary competencies that reside in the alliance partners with commercialization intents and exploiting the technology obtained through exploration. Likewise, Vrontis *et al.* (2017), through a quantitative study on knowledge intensive firms, found that acquiring knowledge from external partners helps in achieving ambidexterity.

An important conclusion has been proposed by Kauppila (2010), who advocated that firms may maximize their inter-organizational exploration and exploitation alliances through the creation of internal organizational ambidexterity (i.e. the creation of social climate, performance management systems, etc.), enabling firms to reap the distinct benefits of both activities. This highlighted the emergence to connect ambidexterity with the management of HR in order to improve the effectiveness of the collaborations among heterogeneous employees that can lead to better performances (Medcof and Song, 2013), as the next section will discuss.

HR practices in explorative and exploitative alliances

HRM regards to all the decisions made by the management of a firm that affect the relationship between the firm and its employees (Beer, 1984). Drawing on March’s (1991) ideas about exploratory and exploitative learning, Kang *et al.* (2007) recommended a theoretical framework to connect ambidexterity with HRM. More specifically, they proposed two relational archetypes (the entrepreneurial and the cooperative) that can lead, respectively, to better exploratory and exploitative outcomes. They also suggested that the process of acquiring, transferring and integrating valuable knowledge distributed within and across organizational boundaries often occurs in the context of social interactions (Kale *et al.*, 2000). Hence, HR practices may help in building social relations among employees and to increase their opportunity, motivation and ability to access the knowledge, which become collective (Dyer and Nobeoka, 2000; Adler and Kwon, 2002; Kang *et al.*, 2007). In fact, the two relational

archetypes require different HRM configurations for exploration and exploitation. These are in line with other HR studies such as Hong *et al.* (2009) that advocated that HR practices should vary in relation to the challenges with which they are associated. Also the study of Medcof and Song (2013) proposes this link arguing that HR configuration should be less or more formalized depending on the nature of their activities (exploration vs exploitation). In fact, some HR theories propose that HR systems should be differentiated to deal optimally with the challenges with which they are associated (Lepak *et al.*, 2006; Hong *et al.*, 2009). Moreover, as suggested by Medcof and Song (2013), HR configurations are appropriately aligned with their wider exploratory or exploitative paradigms, and operate synergistically. In general, many studies found a positive relationship between HRM and several ambidextrous outcomes (Fey *et al.*, 2000; Boselie *et al.*, 2001; Guest, 2001).

Based mainly on the archetypes proposed by Kang *et al.* (2007) and Medcof and Song (2013), explorative alliances should be promoted by: flexible work structures and the design of temporary project teams, which help to engender diverse and transitory connections among core employees and external partners; result-based incentives that are useful in managing and rewarding joint contributions; and trans specialist (or multiskilling) development that allows employees to develop deep knowledge in their own particular task domains but also to understand the interfaces between their particular task domains and others' task domains to explore various applications in particular products. In turn, exploitative alliances should be promoted by: interdependent work structures among core employees and external partners, which allow to develop and maintain strong and dense connections; clan-fostering initiatives that strengthen shared goals and values, which in turn allow to enhance generalized trust between core employees and external partners; and broader skill development that encourages core employees and external partners to focus on broader organizational issues.

Despite these arguments, questions of how MNEs manage HR in explorative and exploitative alliances and support ambidexterity remain underexplored (Garaus *et al.*, 2016), especially in the smart city context (a notable exception is Ferraris, Erhardt and Bresciani, 2017). This is strikingly given that alliances in smart city are necessary to boost innovative activities that a single organization cannot afford and that HRM is key factor to extrapolate higher value from alliances, as the next sections will show.

3. Research design

Context of analysis

Recently, there has been increasing interest in explorative and exploitative alliances in smart city (Sandulli *et al.*, 2017; Ferraris, Erhardt and Bresciani, 2017). This is due to the increasing importance of cities in the development of "smart" innovation offering a dynamic environment for firms operating in different technological field (Scuotto *et al.*, 2016; Bresciani *et al.*, 2017).

Firms engage in explorative alliances in particular with local governments or public agencies for resource pooling (Möller *et al.*, 2005), institutional advantages (Sandulli *et al.*, 2017) and differentiated learning (Dyer and Nobeoka, 2000) reasons. Usually, MNEs develop smart cities project primarily to experiment innovative business model, especially when the technological risk is high (Sandulli *et al.*, 2017).

Public governments are critical in the development of SCPs but they are usually less prepared to manage this kind of knowledge exchanges and this uncertainty. However, public managers rarely support experiments and firms' exploration activities and innovations (Rufin and Rivera-Santos, 2012), which may harm political strategies of decision makers or the interests of significant stakeholders. Given that the final aims of SCPs are the citizens, firms need to be politically (and sometimes financially) supported by city's governments. Moreover, firms promote numerous and flexible alliances in many cities with different public partner, such as city governments, research centers and universities, with

the final aim to improve the possibilities to discover new technologies and services (Carayannis and Alexander, 1999; Scuotto *et al.*, 2016).

In addition, firms also pursue exploitation activities in smart cities to commercialize and to profit from previous exploration activities (Sandulli *et al.*, 2017). To do that, firms may need to develop or extend cooperation networks with several partners and city's stakeholders with different goals, interests and resources such as other established firms, citizens, start-ups, key users or universities and research centers.

Consequently, firms may need to shift from a dyadic alliance management to a portfolio alliance management, increasing the breadth of their networks (Kale and Singh, 2009; West and Bogers, 2014; Ferraris, Santoro and Dezi, 2017).

However, firms face tensions between exploration and exploitation alliances that emerge when they attempt to balance these activities in their alliance portfolio. Using inter-organizational networks, resource allocation constraints and organizational conflicts shift from internal units to the alliance organization (Lavie *et al.*, 2011; Santoro *et al.*, 2017; Scuotto *et al.*, 2017). This is even more compounded due to the differences in institutions and regulatory of different cities where MNEs operate (Healey, 1998) and to the management of both internal and external employees, belonging to other different public and private stakeholders that co-operate in these projects.

Methodology

In order to reach the goals of this paper, we adopted a qualitative multiple case study analysis of SCPs that involved big MNEs (Eisenhardt, 1989; Gomm *et al.*, 2000). These firms participated in numerous research consortia around the world, expanded their operations and technologies into new fields, acquired firms and invested a lot in R&D. According to our research question, this research study focuses on two main dimensions and steps: the management of exploration and exploitation through alliances and their related HR practices.

The study followed an exploratory and qualitative methodology and consisted of 21 in-depth semi-structured interviews lasting about two hours with smart city managers from seven large MNEs participating in SCPs. Smart city managers are firms' project managers who coordinate SCPs with external partners. Each smart city manager is assigned a specific city with the goal of building trust with decision makers and learning the specific processes and problems of the city (Sandulli *et al.*, 2017). Additionally, smart city managers also evaluate how difficult the mutual adaptation is between different stakeholder interests and priorities and firm's resources and strategies. We asked managers questions regarding the SCPs with a focus on the management of inter-organizational alliances and the HR practices used for explorative and exploitative activities. We chose to interview smart city managers mainly for three reasons: they are directly involved in SCPs and in strict contact with other cities' partners; they have the decision-making power within the firm; and in accord with the aim of this study, that is to unveil some peculiarity aspects of alliances within SCPs from the perspective of the firms. Moreover, we decided to study both service and technological innovation in urban environments. Consequently, MNEs participating in the research project were four technology providers and three service providers. We have selected our case studies based on our intimate knowledge of the topic. The choice was made because these are big MNEs that are deeply involved in many and huge SCPs all around the world. Our purpose is twofold: to provide, using examples coming from a wide variety of smart city contexts, key lessons about the management of ambidexterity through alliances; and to highlight, through real smart city alliances' examples, which are the main HR practices used in managing smart city exploration and exploitation projects.

MNEs involved in this analysis covered different industries (software and IT services, manufacturing, building, banking, utilities and telecommunications) and SCPs analyzed

took place in several European countries as Italy, Spain, Belgium, UK, France and Germany. Some examples of these projects are the development of the Milan Subway control room, the smart transportation system in many cities such as London, Paris and Berlin, Expo Milano Control Room, Smart Grids in Barcelona, etc.

In order to process these data, we adopted the cross-case pattern sequencing technique (Eisenhardt, 1989) and tabular displays (Miles and Huberman, 1994). As suggested by Edmondson (1999), these are suitable techniques when reporting findings from case studies and have been widely applied in management. After this, the researcher independently coded the data (Miles and Huberman, 1994). The first author conducted the open coding step in order to identify a comprehensive list of descriptive codes from the transcribed interviews, to identify key emerging themes and discuss these themes. These initial codes were based on a first impression of field notes and reading of the transcribed text, aimed at capturing how smart city managers manage their explorative and exploitative projects leveraging HR practices. Examples of initial codes were “Establishment of routine works,” “employees are moved between two or more jobs in a planned manner,” “bonus are used to reward team for contributing new ideas,” “Setting communities of practice that allow team members to be supportive and align culture” and “developing of 360 degrees feedback.” Then, these initial descriptive open codes were condensed by sorting codes into more analytical categories (axial coding) by all the authors through an iterative process. This allowed the authors to discuss and resolve conflicting patterns. In detail, the authors undertook a second-order analysis to identify the deeper patterns in the data, leading to the second-order themes, and iterated between theoretical abstractions and the descriptive concepts. Then, the authors searched for these concepts in the literature, developing an iterative process between theory and practice. Finally, categories were analyzed and merged into broader analytical categories that would represent explorative, exploitative and HRM outcomes.

4. Results and discussion

Our findings revealed a complex merger of explorative and exploitative work in alliances as well as the related HR practices targeted at managing both internal and external employees. With the aim to expose in a clearer way our results, we decided to create two subsections. The first one aimed at highlighting the evidences with regard to the exploration and exploitation alliances in smart cities, while the second one aimed at focusing on the related HRM practices in these hybrid inter-organizational alliances.

Explorative and exploitative alliances in smart city

The results of our interviews suggest that SCPs may take the form of either exploration or exploitation alliances and that none of the projects specifically address both activities. However, these two alliance modes are integrated pieces of the same framework and they are closely interconnected. In fact, in smart city contexts, new urban services and technologies born with exploration alliances and continue through subsequent exploitation alliances that may also take place in other cities. This temporal separation should enhance the ability of private and public partners to fully implement the new urban services or technologies. In line with this argument, the firms participating in our research defined a strategy of alliance utilization, using explorative alliances in projects with high uncertainty and exploitation alliances to upscale the outcomes of explorative alliances. Some important and original evidences are represented by the fact that the firm can: combine and share knowledge/innovation outcomes with other SCPs run by the same MNEs in the same city or in another different city; explore and test the new technology in one city and exploit this in another or others different cities; and involve different partners in exploration and exploitation alliances in the same technological field.

Even though all the MNEs in our analysis struggled to conduct forms of exploration and exploitation within its own organization, in a new complex context as the smart city one, they were able to tap into the benefits of these activities through their inter-organizational partnerships. MNEs in our research pursued separate exploration and exploitation activities through inter-organizational partnerships in order to maximize the distinct benefits of both. Our observations support previous research on technological cooperation (Rothaermel, 2001), since the firms interviewed preferred to co-operate with a larger number of partners in explorative alliances following the open innovation paradigm to tap in multiple sources and to reinforce knowledge exchanges (Collins and Smith, 2006; Schaffers *et al.*, 2011).

In explorative alliances, all the MNEs in our sample relied on local governments, but also other public actors, such as universities and governmental research institutions. This is for two main reasons. First, firms operating in smart city need to cooperate with local public bodies according to the final goal of these innovation projects, a better delivery of services for the citizens. Second, public partners have a deep knowledge of local infrastructures and of the needs of citizens (public governments) and possess non-overlapping knowledge (universities and research centers). In our research, explorative alliances were built around a set of independent operations pursued by the private actor, who most of the time promotes experiments of technologies or business models in their early stages. In terms of exploitative alliances, MNEs in our sample also enlarge their partnerships to other firms (SMEs and other MNEs) and relied less on public universities and research centers. This is because firms share the risks and responsibilities for the development and implementation of a new technology or service with the partners and the projects were based on shared managerial authority and a high degree of operational involvement. One of the respondents stated that “when the aim of the alliances is exploiting new services within the city, firms with different competencies within the project are needed”.

Our multiple case study showed that firm’s internal capabilities and external networking are closely intertwined. In fact, all smart city manager interviewed stressed that internal capabilities of firms are also critical because often local governments do not have knowledge and management capabilities in this new and complex context, as the smart city one. Thus, firms need to develop internal routines and processes to mobilize, coordinate and integrate structurally separate exploration and exploitation activities at all levels of organizing (Jansen *et al.*, 2009).

Moreover, they need to build relationships with external stakeholders and be active in social networking carefully managing all the relationships (Ferraris, Erhardt and Bresciani, 2017). Thus, smart city managers are forced by corporate managers to establish, develop, maintain and manage all the relationships with city’s stakeholders. Thus, firms choose managers who have high level of relational capabilities. According to this, their final aim is the optimization of the management of social relations with external partners according to the project objectives.

HR practices for explorative and exploitative alliances in smart city

In Table AI, main results of this research are presented proposing a three steps procedure of coding, involving first-order and second-order concepts and aggregate dimensions.

MNEs in our sample clearly implemented HR practices intentionally targeted toward managing social relations among employees involved in SCPs. This means that HR practices can be strategically used to support relational archetypes in external alliances, as suggested by Kang *et al.* (2007). In explorative alliances, smart city managers interviewed usually promote numerous weak social ties among employees and external partners (involved in the projects) in order to be flexible and to scan and access multiple sources of knowledge in exploration activities. Weak and non-redundant networks, rich in structural holes, are likely to enable employees to access novel and diverse knowledge that are crucial

in explorative learning. Therefore, firms create flexible work structures and temporary projects teams that allow employees to: interact with a variety of external partners; stimulate networking motivation that also leads to knowledge exchange in the future and consequent exploitation alliances; and easy access to a bulk of non-overlapping knowledge from different and heterogeneous external partners, public and private.

Furthermore, collective incentives (e.g. team-based incentives based on results) have been developed to encourage explorative learning about new knowledge such as knowledge regarding the processes of the city and discourage, at the same time, social loafing. In fact, firms are in the process of trying to capture and externalize knowledge obtained in SCPs, so the whole organization can learn from those experiences. For example, one MNE created a Cities Competence Center, which coordinates and integrates innovation activities focused on urban services. Smart city and HR managers force employees to facilitate the development of learning capabilities critical in these projects. From our interview, the MNE smart city managers used several HR practices such as multiple career, job rotation and cross-training in order to facilitate this process. From our research, these practices stimulate and influence employee behavior, effort, performance and to work toward certain explorative goals. Finally, HR practices were aimed at interactions among managers and employees, stimulation of knowledge acquisition and cross-works in a planned manner to acquire knowledge.

In exploitative alliances, in contrast, firms usually promote strong and dense connections through the development of formal interdependent work structures among employees and external partners. This enhances mutual adjustments and coordination between the partners. They usually also promote clan-fostering initiatives, which strengthen shared goals and values and facilitate organizational fit and alignment across different parties. MNE managers often promote trust through socialization programs between employees and external partners involved in the projects and through the creation of communities of practices. Moreover, clear goal setting and 360-degree feedback have been highlighted. Here, project managers aim at creating strong ties because firms want to establish long-term partnerships to capture value and monetize from technologies or business models previously discovered and tested with experiments in explorative alliances. As a consequence, firms often chose equity governance and trust-based mechanisms and smart city managers stated that this also plays an important role in the local governments lock-in strategies of the firm. As highlighted in the paper, the advantage to tie with local governments is fundamental in SCPs. Then, other HR practices have been implemented in these exploitation projects. First, the selection of the individual based on their organizational fits, in particular regarding innovative and networking culture. This has the advantage to inculcate common values in these employees that easily flow within the hybrid organizational units built ad hoc to manage the project. The creation and separation of these heterogeneous units are coordinated by smart city manager, a project manager with the aim to interact with external partners, foster cross-functional collaboration and eliminate organizational and technological silos in the cities' organization. This combined with the development of trust between private and public employees involved in the project may lead to goals alignments, mutual adjustments and to a better share of knowledge. Second, on-the-job training is used to enable employees building strong social and cognitive connections (Chand, 2010). Third, team-building activities have been used to expand and integrate different mental models typical of public and private employees (Du Chatenier *et al.*, 2007). In all these activities, smart city managers cover a key role. Table AI summarizes the paper's key findings.

5. Conclusion, implications and future research

Firms in smart cities face multiple challenges, some of which are best met with exploratory activities (e.g. dealing with the introduction of a radical new product) and others with

exploitative activities (e.g. improving the quality of current products in light of customer feedback). Hence, many organizations did not focus on just one dimension of performance – either innovation, flexibility and the exploration of new opportunities, or efficiency, control and the exploitation of existing capabilities (Hoffmann, 2007; Adler and Heckscher, 2013). Today, especially in a complex and innovative context as the smart city one, they must find ways to improve both dimensions simultaneously.

Smart cities' explorative and exploitative alliances are growing due to the business opportunities arising from the application of technological innovation to urban services. Firms explore new technologies in the cities' ecosystems aimed at finding new product and services cooperating with city governments and other city's stakeholders combining different kind of heterogeneous resources. Consequently, firms try to capture value and make money from the technologies, services and products tested. In both cases, they need the support of local governments, so the management of both explorative and exploitative activities in this underexplored and complex context became crucial as well as the HR practices used in each project.

From a theoretical point of view, the management of explorative and exploitative alliances has been deeply studied in the international literature in the last years. However, very few studies focused on the smart city context, which has the potential to open a field of research for its peculiarities. Moreover, the role of HRM has been quite neglected in smart city public-private alliances. Based on the few exceptions (Kang *et al.*, 2007; Medcof and Song, 2013; Ferraris, Erhardt and Bresciani, 2017), this paper has explored the role of HRM in explorative and exploitative alliances in SCPs.

The findings of our qualitative research pose that MNEs used inter-organizational partnerships to manage ambidexterity in smart city. Furthermore, the use of coherent HR practices is particularly useful for cutting-edge innovations in a new and complex context of analysis such as the smart city one, where new technologies need to be tested and applied to the citizens and to the society in general. Consequently, firms are developing smart city alliances routines regarding the HR practices to manage these hybrid partnerships. First, from our analysis, it is emerged that MNEs use these inter-organizational linkages in order to maximize their explorative and exploitation activities; second, HR practices have been designed with the aim to develop social relationships and allow knowledge exchanges as well as to assure the different degrees of control over the project operations according to the explorative and exploitative nature. Moreover, the research highlighted the key role of "smart city manager", that could be conceived a sort of "smart" HR manager. According to the aim of the project, these project managers need to: coordinate the project promoting the right ties between internal and external employees; design the work structure and the project team; and develop and implement the HR practices correctly in order to maximize the benefits of the partnership.

Furthermore, opposite to Kauppila's (2010) findings, strong ties were not established in explorative alliances, allowing firms to easily change partners to one or more with more valuable and compatible resources in order to experiment new technologies and business models. Conversely, firms in smart city purposefully invested in activities that strengthened ties to exploitation partners and increased the social capital of the relationship.

These findings are in contrast with theories of exploration and exploitation (Graetz and Smith, 2007) but they are in line with Kauppila (2010) with regard to the use of inter-organizational partnerships to manage ambidexterity and to the prominent role of project manager. They are partially consistent with the view that HR practices must be varied in light of the organizational processes to which they are being applied (Lepak *et al.*, 2006; Hong *et al.*, 2009). Moreover, these results confirm that HR decision makers must balance costs and benefits when designing HR systems for specific contexts. The literature on HRM particularly benefits through the extension of the contributions of Kang *et al.* (2007) and Medcof and Song (2013).

The first study proposes, through a conceptual methodology, two relational archetypes and social dimensions in exploration and exploitation inter-organizational partnerships. In our paper, we empirically tested this model, highlighting some common elements as well as some contrasting arguments. Moreover, we adopted the model proposed by Medcof and Song (2013) to a new context of analysis (smart city), highlighting again some differences between the features of alliances and the relative HR practices.

An important implication is that HRM systems (the overall configuration or aggregation of a firm's HR practices) are crucial in supporting organizational ambidexterity through inter-organizational partnerships. In fact, according to Garaus *et al.* (2016), HR practices serve to guide, govern and control the behavior of employees (and their interactions with external partners) so that they accomplish the firm's goals according to the exploration or exploitation strategies.

The main limitation of this research regards the explorative nature and the choice of the MNEs involved. Therefore, we encourage successful examples to be documented, involving new firms' experiences of managing exploration and exploitation alliances with heterogeneous partners in smart city and different HRM practices used in these projects. Moreover, we acknowledge the problem of generalizability of results in other context outside the smart city one. Therefore, we hope scholars will try to explore the arguments underlined in this research in other contexts of analysis. Finally, we truly think that there is room for future research addressing the issue concerning social justification of smart city alliances (population growth and rapid urbanization), ICT challenges in SCPs as well as governance issues.

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Further reading

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First order concepts	Second order concepts	Aggregate dimension
Promotion of many relationships with every potential innovators within the city	Numerous and weak ties	Features of explorative alliances
Development of temporary projects teams		
Informal and formal meetings for updates and ideas exchanges	Flexible work structures	
Developing a team culture that allows team members to be more active in knowledge exchange		
Emphasis on collaborative knowledge creation among internal and external team members		
Incentivized effective work and empowerment among internal and external employees	Collective incentives	HR practices in exploration alliances
Team results and performances are rewarded with collective incentives		
Bonus are used to reward team for contributing new ideas		
Emphasis on the development of multiple career for employees	Multiskilling employees	
Emphasis on training multiple skills (e.g. different technologies, different fields)		
Emphasis on broad job description and job rotation		
Emphasis on interactions among smart city managers and employees in order to build new employees' capabilities	Knowledge driven	
Stimulation on knowledge accumulation through learning from current job but also for future job (other smart city project or other cities)		
Employees are moved between two or more jobs in a planned manner		
Stimulating employees to interact with each other in order to create deep social ties	Strong and dense ties	Features of exploitative alliances
Emphasis on developing key relationships between employees and key partners that assure efficiency in the project development		
Emphasis on mutual adjustment and coordination among internal and external employees	Formal work structures	
Adoption of formal mechanisms to share knowledge between internal and external employees		
Establishment of routine works		

Table AI.
Main results regarding the alliances in smart city

(continued)

Emphasis on the development of shared goals and values to facilitate organizational fit and alignment across different parties	Clan-fostering initiatives	
Emphasis on goal alignment between internal and external employees		
Setting communities of practice that allow team members to be supportive and align culture	Social integration	HR practices in exploitation alliances
Emphasis on interactions that are also not related to the job in order to increase common trust and team building		
Emphasis on enhancing organizational skills and specific project skills	Skill training	
Focus on individual training and learning of existing internal processes		
Adoption of formal mechanisms to build shared understanding of final goals	Goals driven	
Narrow job description and set up of formal rules and policies		
Development of 360 degree feedback		

Source: Own elaboration based on the results of the interviews

Table AI.

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