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Public Private Partnerships: Strategic Assets and Managerial Models

Paola Olimpia Achard*, Antonina Di Berardino**¹

Abstract

Most of existing contributions on Public-Private Partnership (PPP) refer to a traditional and financial perspective, or rather to an unbalanced strategic relationship between the public and the private actors. Starting from a PPP traditional definition, the objective of the paper is to analyze: a) the strategic and managerial challenges and changes in the PPP concept, highlighting the institutional lens of investigation; b) the critical role of shared PPP strategies for the long-term sustainability; c) the value generated and shared for the societal wealth and wellbeing.

The paper is divided into three sub-sections. The first one is aimed at shortly analyzing the institutional framework and the sectorial trend and distribution of PPPs. The second one highlights the strategic assets, the managerial approach to PPPs, and the relevance of the multi-stakeholder engagement. The followed approach consists in the multidimensionality analysis of the PPP role and models, according to the necessity to manage uncertainty and create shared value for the direct stakeholders and the indirect ones. The last section introduces the ZTE incidence case, describing the 5G project of L'Aquila (Abruzzi).

Highlights

- the challenges in the PPP strategic and managerial approach;
- the role of PPP as a tool to create and develop business, and to determine the long-term sustainability;
- the potential role of PPP in promoting/anticipating new/further local development paths;
- the lack of a systemic multi-stakeholder engagement, especially for community.

Keywords

public-private partnership, PPP, strategic and managerial approaches, shared value, ZTE, L'Aquila.

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1 Introduction

Since a decade, the ICT sector dynamicity and interconnection opened to new evolutive scenario, highlighting asymmetries in the skill endowments of firms, in term of: a) supply and demand-sides role, functions, drivers and channels -generating radical business model changes and cross-sectorial interferences; b) impact on the environment and on the society, in term of safety and social connections; c) regulation changes, as the one for the privacy and data protection, the sharing economy platforms, and so on; and, d) digitalization processes, interoperability of content among multi-devices, and the linked reduction of the digital divide. In other words, the ICT sector boost hardware and software interventions, and their cross-fertilization (Jorgenson and Vu, 2016).

Public-Private Partnership (PPP) represents, nowadays, one of the instruments considered more strategically significant to align the objectives of the various typologies of operators of the ICT market. With the passage to the New Public Governance (Osborne, 2010), PPPs assumed new and emerging forms, shaped and influenced by the external social and economic changes and challenges.

Notwithstanding the role and relevance of PPP in funding and sustaining infrastructure projects and public services, it is often exploited and explored in a limited framework, mainly related to the subsidiary role (both in horizontal and vertical terms) of private in public utility business. Nevertheless, the disruption of technologies, is calling to reshape the present frameworks, in term of business models, professionals and sustainability paths. The reason states in the manifest uncertainty generated by ICT for markets, workers and collectivity.

The PPP is a strategic tool of local development, to address social needs in a limited/restricted budget frame, to share the risk management of the investment among different actors, and where participants (and indirectly the collectivity) get a mutual benefit and wealth in term of knowledge, relationship and money (Freeman et Al., 2004).

PPP has to be analyzed jointly with the local development initiatives, in supporting the realization of investments of public utility, as health care, transportation, telecommunication, utilities in general, education and so on (World Bank, 2018). The (local) social capital is one of main limiting and/or fostering factor to consider in the analysis of the adopted PPP' models, jointly with the funding systems, the accountability ranges of each public and/or private participant, and, the demand and supply-side characteristics (Achard et Al., 2008).

1.1 PPP institutional and sectorial characteristics

PPP has not a unique definition worldwide (Klijn, 2010). The World Bank provides a general definition of PPP as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance" (World Bank, 2018a). There are different forms of PPP (Caperchione et Al., 2017), but as highlighted by the World Bank (2018a; Hoppe et Al., 2013), the main difference between the procurement and the Public-Private Partnership is the lasting of the relationship, respectively in the first case limited to

accomplish and/or furnish the project/service, and in the second case to manage the long-life assets linked to the long-term nature of the PPP contract. Additionally, according to the Hoppe et Al. (2013) findings, the PPP is a tool to support the cost-reducing investments. None has been reported about the level of the service quality -which may increase or decrease-. Different Authors, as reported in the figure below, moved toward the necessity of defining the PPP. From a definition of the PPP stressing its legitimacy role as public-service-provider, to those of PPP as a long-term contract between a private and a public party for the provision of public services or goods (Campos et Al., 2018).

Authors	Definition
Forman (2006, p. 112)	"Partnerships between the public and private sectors represent one of the strongest means to detect, deter, disrupt and deny terrorist and other criminal organizations illicit profits and material support required to fuel their evil acts".
Yuan, Skibniewski, Li, and Zheng (2010, p. 96)	"Their urgent needs for quality public facilities and services make public sector adopt PPP methods to deliver corresponding satisfactory projects. Additionally, a successful PPP project relies on the satisfaction of end users, particularly in the operational stage" (p. 91). "Concurrently, providing quality service is very important for every stakeholder group, which is also a distinguishable characteristic of PPPs".
Cruz and Marques (2011, p. 393)	"For example, Fraport, the airport manager in Frankfurt, has been widening its business to areas such as ground handling and logistics, real estate, security, advertising, consulting, among others".
Rebeiz (2011, p. 421)	"A public-private partnership (PPP) is an agreement between a host government and a private entity in which the private sector supplies infrastructure assets and services that are traditionally provided by the government".
Cheung and Chan (2011, p. 409)	"[...] [PPP as a] flexible management mechanism, expertise and cost-awareness".
Brunet-Jailly (2012, p. 487)	"[...] PNWER [Pacific Northwest Economic Region] is an operating public/private sector partnership designed for the facilitation of trade across the larger region"; Integrated Border Enforcement Teams (IBET).
Keel and Forrer (2012, p. 200)	"[...] when PPPs are done properly, in a way that is responsive and flexible in the delivery of services, and when they are held accountable to standards of performance in ways that are transparent to the public, [...] such partnerships are a success for democracy".
Swanson and Smith (2013, p. 335)	"[...] the idea of private support to public disaster response is framed as a public-private partnership (PPP)".

Figure 1: Previous definitions concerning PPPs beyond the provision of infrastructure. Source: Campos M.L., Morini C., Salati Marcondes de Moraes G.H., Inácio Júnior E. (2018), "A performance model for Public-Private Partnerships: the authorized economic operator as an example", *RAUSP Management Journal*, 53 (2018), pp. 268-279.

A more broaden definition is proposed by Verweij et Al. (2017). The Authors define PPP "as an enduring contractual relationship between two or more partners of which at least one is a public body, in which both public and private partners bring some kind of resources (e.g., money, property, authority, knowledge) to the partnership, and in which responsibilities and risks (e.g., financial, economic, social) are shared for the purpose of delivering public infrastructure-based products and/or services". Similarly, Keränen (2017) reports that, apart for the legal forms -from the more traditional procurement to the more innovative collaboration approaches- "If properly managed, PPPs expand resource exchange, diminish transaction costs, increase risk sharing, clarify contract specifications and encourage stronger interorganizational collaboration (Erridge & Greer, 2002) and thereby improve the quality and reliability of public services (Kwak, Chih, & Ibbs, 2009)".

Since the beginning of the crisis, the PPP has been perceived an alternative way to make investments, and thus promoted by policies and preferred in term of resource allocation and risk management for its role of fostering innovation and answering to new arising demands (Saussier, 2013; Engel et Al., 2018; Sedjari, 2004; Brinkerhoff et Al., 2011). Moreover, in the ICT sector "caused by high capital expenditure in conjunction with demand uncertainty" (Sadowski et Al., 2009) the PPP is a preferred tool to fund new innovative investments.

Even than before, it is fundamental an accurate strategic planning of resources and competences in order to match and boost the synergies and better valorize the transformation (in term of "effort of one of the partners to modify the attitude and conduct of the other according

to its own priorities”) in a multi-dimensional and multi-stakeholder perspective (Sedjari, 2004; Leite and Bengtson, 2018).

According to Sedjari (2004), PPP can be classified by area of interventions (sectoral partnerships, partnerships limited to certain sectors or projects, operations at city level and partnerships with regional impact) or form of partnerships (PPP initiated by public actors, PPP initiated by private actors, Appointed PPP and concession/forms related to it). Referring to the latter, it has to be noted that, mainly in the OECD countries, PPP has become a means to boost technology and innovation. It is not unusual to observe the cooperation among different actors, from the public authorities, to the universities and research institutions, to the private business and/or the single non-profit organization. Despite the potential benefits of PPPs, “partnerships are, however, not without cost and the mechanisms for securing their success are very variable” (Sejari, 2004).

Furthermore, the sectorial distribution of PPPs, to a worldwide extent, are the utilities in term of energy (energy and power) and water management, health, environment (solid waste and clean technology), transport, telecommunications/ Information & Communication Technology (ICT), and all the urban renewing projects/areas (World Bank, 2018). According to Geddes e Al. (2013), in the USA the PPP has been used mainly in the transportation sector, followed by urban sector as the water and sewage management and the social infrastructures (e.g. prison, schools). China is increasingly using PPP both to develop the internal services and to compete in the international market to create infrastructures, mainly related to transportation and ICT. In Europe too the main percentage of value and projects is distributed in the transportation and ICT sector, covering the 93% of established PPPs (EPEC, 2018).

Most of interests on PPP are related to legislative, political and accountability aspects. At the same time, considering a managerial approach, the interest is mainly focused on the risk management and the principal-agent problems (Burke and Demirag, 2017; Caperchione et Al., 2017; Roehrich et Al., 2014).

1.2: Strategic and managerial approach to PPP

PPP can be analyzed in a broaden perspective, where the nature of the partnership and the strategic relevance and frequency of the transaction acquire more importance compared to the (legal) forms.

According to Geddes and Wagner (2013) referring to USA scenario, the term PPP changed according to new influences, as the social innovation one and the bottom-up pressures; it “has evolved to encompass a range of contractual relationships between a public project sponsor and a private partner that facilitate a larger private role”. In Europe, even considering the statistical database (see EPEC, 2018), there still is a strong linkage to the traditional form, but in the practice new change and challenges are going beyond.

PPP have different benefits as minimizing transactions costs in project implementation, risk transfer, partnering relationships, solve the lack of resources or competences (Sadowski, Nucciarelli and de Rooij, 2009; Tang et Al., 2010; Nisar, 2013).

To analyze the correct PPP functioning, the Critical Success Factors (CSF) have to be determined (Campos et Al., 2018; Chan et Al., 2010; Muhammad et Al., 2016). According to

existing literature, Authors defined CSFs those factors referring to the quality of the relationship and boosting the success of PPPs. As predictable, the main frequency refers to the “appropriate risk allocation and sharing” and the necessity of a “strong and good private consortium”, rather less attention is addressed to the “stakeholder management”. Factors mainly relate to the need of legitimacy rather than legitimation, as in fact, other incisive factors in term of frequencies are the “transparent procurement” and the “political support”. An interesting element is also represented by the “public/community support”.

Applying the institutional theory lens, it can be argued that every form of partnership indicates a level of involvement of each single institution, the public institution, the private institution, and the society. In the PPP as traditionally intended, the partnership was mainly focused on the direct -and/or mediated from a third neutral party (Burke and Demirag, 2017; Leite et Al., 2018; Keränen, 2017)- relationship between the public and the private institutions. It is evident that the society as institution as a critical role. The cultural, social, economic norms and aspects in which the partnership is based influence and determine the sustainability and the form of the partnership.

PPPs as stated above, developed in a perspective to manage and share risk investments and resources, and in a long-term contractual relationship so to reduce the risk of opportunism among the parties (Powell, 1990). PPPs developed jointly to the New Public Management (NPM) paradigm, oriented to manage effectively the public resources and where the emphasis was put on the punctual and contractual stated management of resources and performance. Nowadays, assuming the necessity of the NPM assumptions and requirements, the evolutionary passage is the New Public Governance (NPG) which requires new approach to manage the societal needs. In fact, the NPG considers the organization in its environment, in a more networking dialectic, where the strategic and sustainable long-term visioning of parties involved is crucial (Osborne, 2010).

Not surprisingly, the dynamicity of external environmental changes and challenges, created an increasing of uncertainty in the markets in term of business survival, in the workers in term of skills needed, in the society in term of sustainability of the whole politic-social-economic system. In this perspective PPPs assume new and multiple purposes, not limited at managing effectively the projects, but focused on disseminating the value generated from a project in a cross-sectoral orientation. The process because of an isomorphism process (DiMaggio and Powell, 1991), should led to generate social innovation. Each party involved requires more than transaction, calling for the complementarity of resources and reciprocity to participate in -not considering the advantage only in the economic-financial perspective- (Ouchi, 1980).

In these turbulent times, the characteristics belonging to the collaboration form shapes and influences the rethinking of the Public-Private Partnership, more in term of complementarities (of resources, of strategies etc) rather than economic-financial return.

The globalization of the economy and financial crises have emphasized the socio-economic effects of a competition between companies and country systems no longer based on production (industrial and agricultural), but on knowledge. The tertiarization of the economy and technological development, especially in the ICT sector, has been the catalyst for the collapse of the monopolies of knowledge to which people were accustomed, and has favored the dispersion of knowledge in the most varied territorial and/or sectorial areas.

Generally, PPP are conceived in terms of risk sharing between the public and the private parties (over the others referring to the classification and definition of PPPs, KS et Al., 2016; Achard et Al., 2008). The collaboration, apart from the investment risk sharing does not exist.

In a more broadened perspective, always contesting it in a sectorial public-interest perspective, it can be argued that investigating the managerial and organizational aspects of new PPP forms have to be stressed in terms of (1) complementarity of public-private resources and (2) private profitability of the investment.

Point (1) refers to the degree of strategic and/or operational synergies between the public and the private parties. If it is high, there are complementarities of resources and capabilities, thus to put the basis for the “P”artnership. If it is low, there is not a joint interest to collaborate.

Point (2) refers to the interest and willingness of the private party to start alone the investment in terms of risk management and potential (financial and strategic) profitability. If it is high the private party has a positive strategic and/or financial expected output compared to the risks of managing alone the whole investment. If it is low, the balanced expected output shows a zero value or a negative trend.

In the cases of high degree of complementarity of resources and capabilities, the degree of interest of the private party thus, strongly influence the balance between the public and the private parties in terms of role and responsibilities, moving from a principal-agent situation (mainly managed by contractual provisions to assess and balance the risk of the partnership) to a principal-principal one (mainly referred to a win-win approach and thus mainly related to new and/or unexplored knowledge or innovation pathways) (Klijn, 2010; Garg and Garg, 2017; Klievink and Janssen, 2014; de Palma et Al., 2009). In the ICT sector, the typologies of the PP Partnerships refer to the maturity stage of the innovation to be introduced; or in other words, to the supply-side characteristics. If the innovation already exists, it has to be implemented and scaled; the PPP have specific characteristics in terms of designing, building and management. If the innovation is on the process to be developed and tested, the partnership refers to an “experimental” collaboration where both parties contribute to the innovation definition, in a more participative and collaborative approach (Tab 1) (Campanella, 2011; Klievink et Al., 2016; Witters et Al., 2012).

Degree of private profitability-risk management of the investment	High	Full private interest	New PPP collaboration forms – knowledge and innovation oriented
	Low	Full public investment	Traditional intended PPP – financial and risk sharing oriented
		Low	High
		Degree of complementarity of Public-Private resources	

Table 1: Degree of private profitability-risk management of the investment and Degree of Complementarity of PP resources Matrix. Authors elaboration.

2 PPP governance: strategic assets and interdependences

The governance of the partnership is central and strategic for each institution in terms of (1) legitimacy and legitimation, (2) strategic synergies and (3) shared value. In fact, about the legitimacy, a good and broadened intended governance will enhance the involvement and

commitment of relevant stakeholders in a participative, unless expensive and long-lasting process; in term of legitimation it will effectively reduce the gaps in perception among the relevant stakeholders. In term of strategic synergies new governance and managerial approaches are required to effectively and efficiently face with and to the challenges figure out by new/unexplored/unexpressed (societal) needs. Referring to the process of shared value creation, a good PPP governance will lead to a society wealth, through the direct and indirect supply-chain flows (Engel et Al., 2018) and services provision.

Studies on the cross-sector and multi-stakeholder partnership evidence the requirement of new governance and managerial approaches in term of “how partners’ resources and capabilities may interact in a more efficient way in order to create social value” (Grudinschi et Al., 2013).

An effective and efficacy PPP requires an intense strategic (and control) planning activity. The iterative process-led approach supports the whole activities since the needs analysis, toward the design stage and the continuous control of the implementation. Achard et Al. (2008) refer to it as a conceptual model, aimed at identifying needs, purposes and resources of participants, their roles in deploying the network, and finally, the provisioning of services.

In most of cases, the public institution activities implicitly assume and/or is assumed to be the society institution perspective, but gaps and divergences in perception report a different commitment and engagement. In fact, it has been highlighted how the public institution support and boost the relationships in a more efficacy pathway (Opara e Al., 2017).

2.1 PPP’s shared values: a multi-dimensional and multi-stakeholder analysis

According to Leite and Bengtson (2018), the complexity of social problems creates interdependence between private and public interests, while the need to balance the interests generated by such partnerships in value capture becomes crucial, meaning for value the resultant of the management of the interests and pressures of the different stakeholders (Freeman et Al., 2004; Donaldson and Preston, 1995) and which determine the governance of the partnership (Christopher, 2010; Freeman and Evan, 1990).

PPP are means enhanced to create a more broaden value in an efficiently way (Leite and Bengtson, 2018). Parties must have a certain degree of reciprocal commitment, and interdependencies in term of resource, value and advantage generated, despite assuming their different object in pursuing the partnership (Lundberg and Andresen, 2012; Leite and Bengtson, 2018; Grudinschi et Al., 2013; Bowman and Ambrosini, 2000; Nguyen et Al., 2017; Achard et Al., 2008; Reijniers, 1994).

Basing on the assumption that each partnership has its own local and environmental-based features, the public actor lack to not accurately plan the deployment of strategic synergies, in governing the partnership (Grudinschi et Al., 2013) which require an evolution toward the new governance paradigm (Salomon, 2002); in fact, most of PPPs are mainly enclosed to the specific projects activities and not embedded in a more broaden “P”ublic plan in term of innovation and growth (see the experience reported in the health sector by Roehrich et Al., 2014; or in the ICT reported by Nucciarelli et Al., 2013). Strategic interdependencies instead are critically evaluate by the “P”rivate actor, as well as the valorization of the operations of the whole investment.

Appropriate distinction has to be made between the value creation process which involves the transaction parties, and the value capture which involves every stakeholders of the economic, as well as social system (Bowman and Ambrosini, 2000; Lepak, Smith and Taylor, 2007).

In the PPPs is expected by parties to share a level of commitment going (and for going) beyond the dialectical contractual relationships (Leite and Bengtson, 2018; Brinkerhoff and Brinkerhoff, 2011). Commitment refers to the “size of investment and actions undertaken with respect to the counterpart itself or to other connected actors” (Leite and Bengtson, 2018), or in other words, it refers to the synergies deployed by the parties, singularly involved in the partnership (Sejari, 2004). The above explained intersections between the parties involved directly and indirectly in the partnership, is reported in Figure 2.

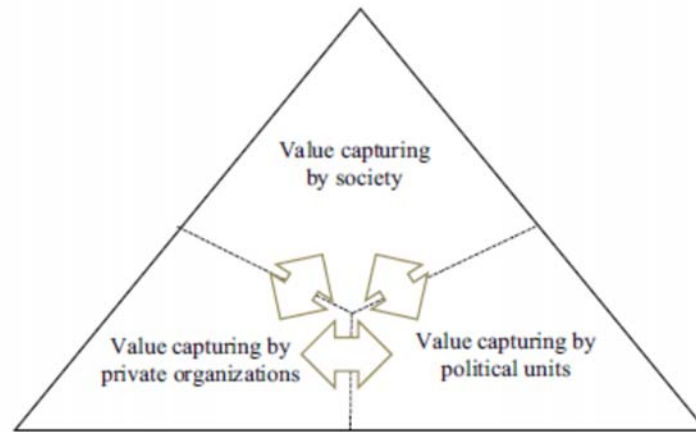


Figure 2: Value capture in public-private cooperation. Source: Leite E., Bengtson A. (2018), “A business network view on value creation and capture in public-private cooperation”, *Industrial Marketing Management*, forthcoming.

The conceptual model, thus the iterative process-led perspective (aimed at identifying needs, purposes and resources of participants, their roles in deploying the network, and finally, the provisioning of services) has to be stressed in a dynamic interplay among relevant stakeholders, embedding it in the enlarged external environment analysis of determinant and influencing factors (Achard et Al., 2008; Roumboutsos et Al., 2010) to generate a more broaden and spread value (as in the case of municipalities analyzed by Sadowski et Al., 2009). Nevertheless, the dynamicity and heterogeneity of PPP models and applications among the different European countries, imply to analyze the instrument in its external and environmental framework, highlighting the importance of considering the sustainability concept in all the three declinations -social, economic, environment- and with a multi-dimensional approach (political, economic, social, technologic, environmental and legal).

3 The ZTE experience

Evidences in the present work, illustrating a strategic and managerial PPP approach, is through the ZTE company.

ZTE is a leading company working in the telecommunications sector; in the specific, the company works in providing integrated telecommunications equipment manufacturer and integrated global telecommunications solutions.

ZTE was founded in 1985 in Shenzhen (China) under the name of Zhongxing Semiconductor Co. on the initiative of a group of local entrepreneurs coordinated by the Chinese Aerospace Research Ministry. Till the end of the XX century, the ZTE was mainly engaged in manufacturing chips, processors and other semiconductors for Chinese companies. Nowadays, ZTE is an international Chinese private company, controlled by the Chinese government for the 51% of

total shares. In fact, the ZTE governance is distributed for the 17% to the Shenzhen Aerospace Guangyu Industry Corporation and the 34% to the Xi'an Research Institute of Microelectronics Technology; both companies are totally indirectly held by the China Aerospace corporation, the Chinese public company for the aerospace studies and researches.

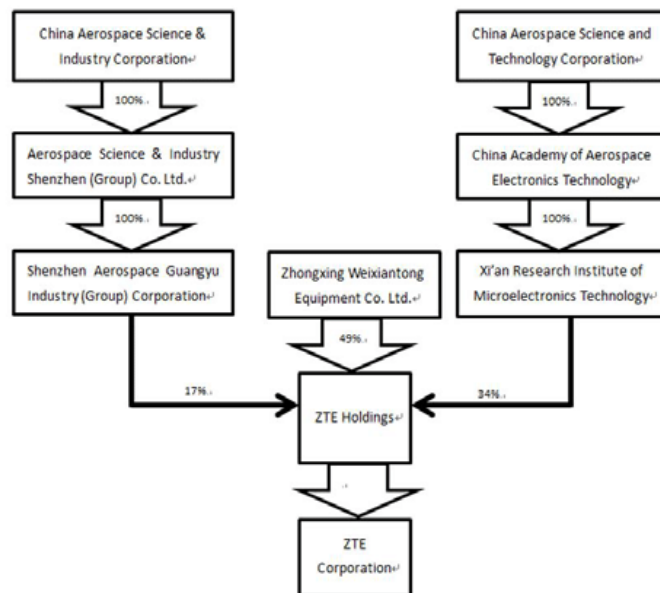


Figure 1: The ZTE ownership. Source: Ran L., Cheong K-C. (2016), "How Much " State " is in China's State Enterprises? A Case Study of ZTE Corporation in an Era of Reform", *International Journal of China Studies*, 7(3):245-270.

ZTE has the headquarter in Shenzhen (China), and different subsidiaries around the world; France, Turkey, Italy, Germany, Netherland, UK, Spain, Poland, Bulgaria, Czech Republic, Finland, Sweden and other different commercial and/or strategic agreement with European and non-European Countries.

ZTE in 2017 generated a revenue of 108.815 million in CNY, with an increase of 31,07% compared to the previous year, and a total number of employees of 74773 (ZTE Corporation, 2018).

ZTE works in three main related businesses: the "R&D", captive business for the company works, the "mobile device" related to the consumer market (and mainly affected by the recent US ban) and, the "integrated services" related to the business and government targets.

The "R&D" business is the core business of the company where are employed almost the 50% of the total employees which are researchers and engineers; ZTE is one of worldwide operators in terms of patents, winning the Mobile World Congress (MWC) in 2015 – held in Barcelona- for the MUSA (Multi-User Shared Access) antenna, more powerful from 3 to 6 time compared to the existing MIMO (Multiple Input, Multiple Output) Massivo antenna. In addition, in 2018, ZTE won the prize for the ZTE Smart Parking Solution (GSMA, 2018) developed for the "Smart city project", in partnership with the Provence of Brescia (Italy) and the A2A company. The "mobile device" business instead opened the internationalization markets, in fact ZTE provides its products in all the Continents, and its specialized suppliers networks are mainly from USA. The recent Trump ban influenced and affected this business. Finally, the "Integrated services" business, has a project led organization, and as main target strategic partnership with other companies and/or directly with governments (local and national).

3.1 Research methodology and limits

For the case study analysis, we approached through desk researches as a starting point of the study. The incidence case study represents a qualitative methodology approach which need to be strongly contextualized over the time of implementation of PPP.

3.2 Evidences

As stated above, in the company description, related to the business of “Integrated services”, in the Italian and European scenario, after the launch of the Communication “5G for Europe: an Action Plan” - published in September 2016, each Member State had to identify the frequencies through which to deliver the future 5G. In Italy, with the Legge di Bilancio 2018 (Law 27 December 2017, No. 205), in particular, in accordance with the provisions of the Action Plan, the Government has identified the frequency resources to be allocated to 5G services, in the 694-790 MHz bands, 3600-3800 MHz and 26.5-27.5 GHz; the joint assignment of all the 5G pioneer waves is entrusted by the AGCom (the Italian government independent institution for the regularities and customer protection in the telecommunication sector) which defines the procedures for the allocation of rights to use these frequencies (by April 2018) (Principali, 2018). For the Digital Agenda 2020 strategy, the Ministry of Economic Development (MISE) has identified 5 cities on the basis of geographical distribution criteria, capillarity of ultra-fast connectivity, availability of frequencies in the 3.7-3.8 band, and the geographical position and proximity to the European corridors. In addition to the three cities selected with these criteria, L'Aquila and Matera were also identified: the first in the post-earthquake reconstruction phase as an infrastructure-open city, and, the second one as the European capital of culture in 2019 in which many projects are focusing on the digital technologies (Beltrame, 2017). The MISE tender has been won by Vodafone (for the project in Milan), Wind-3 (for Prato and L'Aquila) and Fastweb-TIM-Huawei (for Bari and Matera). But the first Italian city to have a 5G network will be Turin thanks to the (private) interest of TIM.

ZTE is partner of Wind-3 and Open Fiber as a supplier of end-to-end installations in the pre-commercial planning of 5G in Italy for the cities of Prato and L'Aquila, winning a maxi-order of 1 million euro (Capesato, 2016; Savelli, 2016). The partnerships between ZTE, universities and local companies will aim to test and verify in a widespread way the technical performance and 5G network architecture, the integration of 4G / 5G networks and the future uses of 5G technology, including AR / VR (Augmented Reality / Virtual Reality) functionality, smart city, public security, 5G health care and Industry 4.0 (Zorloni, 2017).

The network scenario in L'Aquila is between Wind-3 and Open Fiber as winning partners of the MISE tender for L'Aquila and Prato, they started a strategic partnership with ZTE, which started a strategic agreement with the University of L'Aquila, generating directly and indirectly a wealth (economic and social) for the whole Municipality of L'Aquila (News Town, 2017; Università degli Studi dell'Aquila, 2017; IF/NEWS, 2017).

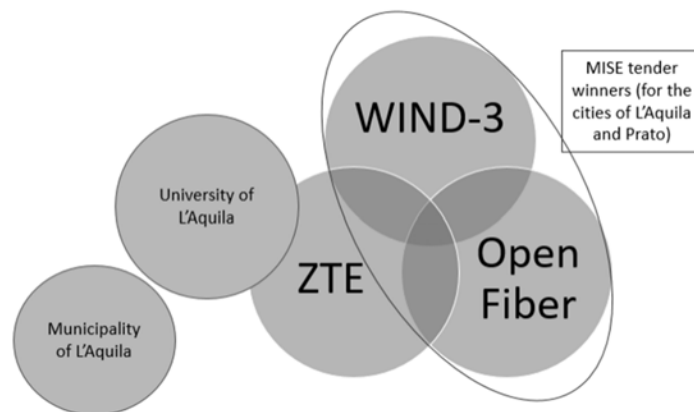


Figure 2: The 5G partners network in L'Aquila. Authors elaboration.

ZTE is a leading Chinese private company, controlled by public institution, which positively and/or negatively influences the nature of relationships established by ZTE and the opportunities to be caught and followed. In its being leader in the integrated services, the strategic relationship among the partners is a source of advantage for new projects and work opportunities. In fact, ZTE cooperates with Open Fiber in other areas of Italy for the FTTH (Fiber To The House) deployment, providing integrated services to the communities. And, Open Fiber and Wind-3 has a strategic partnership to widespread the fiber in 271 Italian cities (Open Fiber Corporation, 2018).

ZTE is investing a lot in Italy and has decided to adopt several centers that deal with training and technological innovation; the support from Government, universities and industry is crucial for effective and stable collaborations (ZTE Corporation, 2018).

In L'Aquila, the ZTE company finds the professionalism and expertise of researchers; the University of L'Aquila has been involved for a while in 5G research projects (see project INCIPICT - <http://incipict.univaq.it/at-a-glance/>). In fact, with the strategic agreement signed in October 2017, the ZTE Research and Innovation Center (ZIRC) led to investigate solutions for different technologies as the pre-5G, 5G, NB-IoT (Narrow-Band Internet of Things), V2X (Vehicle-to-everything), Smart City, and more to prepare for the 5G evolution. The ZIRC is part of a commitment to invest 500 million of euro in Italy over the next 5 years (Cottone, 2017). ZTE has also revealed plans to build its European 5G hub in Italy and is partnering with Wind Tre and Open Fiber to build a 5G pre-commercial network in the 3.6-3.8 GHz band in L'Aquila.

The ZIRC strategy will be based on a close interaction between the University (and through its national and international scientific community) and the ZTE Research and Development Department. The Center will provide adequate support to the University's advanced training programs (masters and research doctorates on subjects consistent with the Center's aims), recognizing in these programs primary sources for the identification of professional skills to be involved in the activities of the Center. There is also an optimal basis for the promotion of research proposals in the European context (program H2020 and subsequent) (ZTE Italia, 2018).

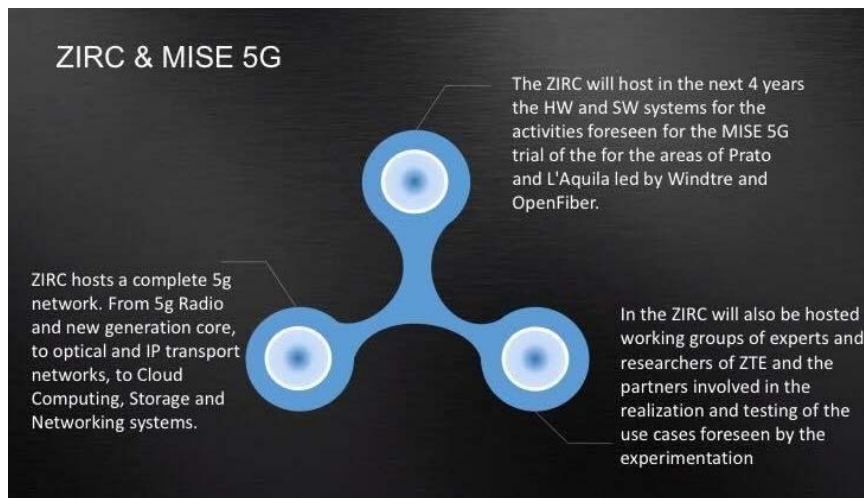


Figure 3: The ZTE Research Center in L'Aquila. Source: ZTE Italia LinkedIn profile - <https://it.linkedin.com/company/zte-italy>

The ZIRC represents one of ZTE commitment to Italy and the research of excellence. In fact, to the near side of the research and innovation center, there is the ZTE Universities network, funded in 2003 in Shenzhen Dameisha Beach (China). The latter has in Italy its hotspot in the University of Tor Vergata in Rome for the training and the skills updating of ICT professionals and businesses, with very differentiated (in term also of modularity) and diversified offers (from the core network, wireless network, wire network, access network and so on) (ZTE Corporation, 2018).

4 (Expected) conclusions

New forms of PPP are emerging and contradistinguish the specific political, economic and social aspects of each local and single reality.

The paper with the incidence case study aims to highlight new form of partnership, where in a long-term procurement there is not a sharing of the risks between the public and private actor(s), but a sharing of collaborative, capitalized and knowledge management, in a win-win dealing situation. The typology of the partnership is based on a principal-principal relation and confirming the evolution path of the partnership reported by Bonfim et Al. (2018), thus, that the partnership started as a contractual relation, evolving in the knowledge transfer, and that further has to be exploited in a large-scale innovation.

The incidence case study highlights the need to investigate, with the help of strategic tools (mainly strategic architecture analysis, interdependencies analysis, value system) the involvements of all actors, including the municipality and the community, in terms of a) participation of the community representative group(s) for a clear legitimation process (event to effectively spread and test the ICT outputs), and b) shared strategy for the growth, wealth and wellbeing of the entire (local) society.

In conclusion, studies on the cross-sector and multi-stakeholder partnership evidence the requirement of new strategic governance and managerial approaches to introduce in PPP projects a fundamental strategic analysis which starts from the study of interdependencies and interactions between resources and capabilities of all involved partners, and arrives to consider the common objectives of value share and creation.

References

- Achard P.O., Nucciarelli A., Sadowski B.M. (2008), "Public-private partnerships for broadband access: case study evidence from Italy and the Netherlands", *Public/Private Interplay in NGCs Conference*, Seville, Spain, 10-12 December 2008.
- Bonfim L.R.C., Segatto A.P., Gonçalves S.A. (2018), "A conical-helix model of technology transfer and public-private partnerships for technological development in Brazilian public health", *Technology in Society*, 53 (2018), pp. 110-123.
- Bowman C., Ambrosini V. (2000), "Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy", *British Journal of Management*, 11, pp. 1–15.
- Brinkerhoff D.W., Brinkerhoff J.M. (2011), "Public-private partnerships: perspectives on purposes, publicness, and good governance", *Public Administration and Development*, 31(1), pp. 2-14.
- Burke R., Demirag I. (2017), "Risk transfer and stakeholder relationships in Public Private Partnerships", *Accounting Forum*, 41 (2017), pp. 28–43.
- Campanella M. (2011), "The role of e-Infrastructures in PPP activities in ICT and in Future Internet R&D", e-IRG Workshop, Budapest, 4-5 April 2011.
- Campos M.L., Morini C., Salati Marcondes de Moraes G.H., Inácio Júnior E. (2018), "A performance model for Public-Private Partnerships: the authorized economic operator as an example", *RAUSP Management Journal*, 53 (2018), pp. 268–279.
- Caperchione E., Demirag I., Grossi G. (2017), "Public sector reforms and public private partnerships: Overview and research agenda", *Accounting Forum*, 41 (2017), pp. 1–7.
- Chan A.P.C., Lam P. T.I., Chan D.W.M., Cheung E., Ke Y. (2010), "Critical Success Factors for PPPs in Infrastructure Developments: Chinese Perspective", *Journal of Construction Engineering and Management*, pp. 484-494.
- Christopher J. (2010), "Corporate governance—A multi-theoretical approach to recognizing the wider influencing forces impacting on organizations", *Critical Perspectives on Accounting*, 21 (2010), pp. 683–695.
- de Palma A., Leruth L., Prunier G. (2009), "Towards a Principal-Agent Based Typology of Risks in Public-Private Partnerships", IMF Working Paper, August 2009, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.544.7181&rep=rep1&type=pdf>.
- DiMaggio P.J., Powell W.W. (1991) "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organization Fields, in Powell W.W., DiMaggio P.J. (eds), *The New Institutionalism in Organizational Analysis*, The University of Chicago Press, Chicago.
- Donaldson T., Preston L.E. (1995), "The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications", *The Academy of Management Review*, 20(1), pp. 65-91.
- Engel E., Fischer R., Galetovic A. (2018), "The joy of flying: Efficient airport PPP contracts", *Transportation Research Part B*, 114 (2018), pp. 131–146.
- EPEC (2018), "Public Private Partnerships in the EU: Widespread shortcomings and limited benefits", n.09/2018, <http://publications.europa.eu/webpub/eca/special-reports/ppp-9-2018/en/>, last verified July 2018.

- Freeman E.R., Wicks A.C., Parmar B. (2004), Stakeholder theory and 'the corporate objective revisited', *Organization Science*, 15(3), pp. 364-369.
- Freeman R.E., Evan W.M. (1990), "Corporate Governance: A Stakeholder Interpretation", *The Journal of Behavioral Economics*, 19(4), pp. 337-359.
- Garg S., Garg S. (2017), "Rethinking Public-private Partnerships: An Unbundling Approach", *Transportation Research Procedia*, 25 (2017), pp. 3789-3807.
- Geddes R.R., Wagner B.L. (2013), "Why do U.S. states adopt public-private partnership enabling legislation?", *Journal of Urban Economics*, 78 (2013), pp. 30-41.
- Grudinschi D., Kaljunen L., Hokkanen T., Hallikas J., Sintonen S., Puustinen A. (2013), "Management Challenges in Cross-Sector Collaboration: Elderly Care Case Study", *The Innovation Journal: The Public Sector Innovation Journal*, 18(2), article 7.
- Hoppe E.I., Kusterer D.J., Schmitz P.W. (2013), "Public-private partnerships versus traditional procurement: An experimental investigation", *Journal of Economic Behavior & Organization*, 89 (2013), pp. 145- 166.
- Jorgenson D.W., Vu K.M. (2016), "The ICT revolution, world economic growth, and policy issues", *Telecommunications Policy*, 40(5), pp. 383-397.
- Keränen O. (2017), "Roles for developing public-private partnerships in centralized public procurement", *Industrial Marketing Management*, 62 (2017), pp. 199-210.
- Klievink B., Bharosa N., Tan Y-H. (2016), "The collaborative realization of public values and business goals: Governance and infrastructure of public-private information platforms", *Government Information Quarterly*, 33(1), pp. 67-79.
- Klievink B., Janssen M. (2014), "Developing Multi-Layer Information Infrastructures: Advancing Social Innovation through Public-Private Governance", *Information Systems Management*, 31 (2014), pp. 240-249.
- Klijn E.H. (2010), "Public Private Partnerships: deciphering meaning, message and phenomenon" in: Hodge G. and Greve C. (2010), *International Handbook of PPP*, Cheltenham, Elgar: 68-80.
- KS J., Chowdhury A., Sharma K., Platz D. (2016), "Public-Private Partnerships and the 2030 Agenda for Sustainable Development: Fit for purpose?", DESA Working Paper No. 148, February 2016.
- Lawrence T. (1999), Institutional strategy, *Journal of Management*, 25(2), pp. 161-187.
- Leite E., Bengtson A. (2018), "A business network view on value creation and capture in public-private cooperation", *Industrial Marketing Management*, forthcoming.
- Lepak D.P., Smith K.G., Taylor M.S. (2007), "Value creation and value capture: a multilevel perspective", *Academy of Management Review*, 32(1), pp. 180-194.
- Lundberg H, Andresen E. (2012), "Cooperation among companies, universities and local government in a Swedish context", *Industrial Marketing Management*, 41 (2012), pp. 429-437.
- Muhammad Z., Kwang Sik K., Johar F., Sabri S. (2016), "An overview of Critical Success Factors of Public-Private Partnership in delivery of urban infrastructure and services", *Journal of the Malaysian Institute of Planners*, Special Issue IV (2016), pp. 147-162.

- Nguyen D.N., Imamura F., Iuchi K. (2017), "Public-private collaboration for disaster risk management: A case study of hotels in Matsushima, Japan", *Tourism Management*, 61 (2017), 129-140.
- Nucciarelli A., Castaldo A., Conte E., Sadowski B.M. (2013), "Unlocking the potential of Italian broadband: Case studies and policy lessons", *Telecommunications Policy*, 37 (2013), pp. 955–969.
- Opara M., Elloumib F., Okafor O., Warsamed H. (2017), "Effects of the institutional environment on public-private partnership (P3) projects: Evidence from Canada", *Accounting Forum*, 41 (2017), pp. 77–95.
- Osborne S.P. (2010), *The new public governance? Emerging perspectives on the theory and practice of public governance*, Routledge, New York.
- Ouchi W.G. (1980), "Markets, Bureaucracies, and Clans", *Administrative Science Quarterly*, 25(1), pp. 129-141.
- Powell W.W. (1990), "Neither market nor hierarchy: network forms of organization", *Research in Organizational Behavior*, 12, pp. 295-336.
- Reijniers J.J.A.M. (1994), "Organization of public-private partnership projects. The timely prevention of pitfalls", *International Journal of Project Management*, 12(3), pp. 137-142.
- Roehrich J.K., Lewis M.A., George G. (2014), "Are public-private partnerships a healthy option? A systematic literature review", *Social Science & Medicine*, 113 (2014), pp. 110-119.
- Rouboutsos A., Chiara N. (2010), A strategic partnering framework analysis methodology for public-private partnerships, *Journal of Financial Management of Property and Construction*, 15 (3), 12 – Nov 9, 2010.
- Sadowski B.M., Nucciarelli A., de Rooij M. (2009), "Providing incentives for private investment in municipal broadband networks: Evidence from the Netherlands", *Telecommunications Policy*, 33 (2009), pp. 582–595.
- Salomon L.M. (2002), *The tools of government. A Guide to the New Governance*, Oxford Press University, Oxford.
- Saussier S. (2013), "Public Private Partnerships", *Journal of Economic Behavior & Organization*, 89 (2013), pp. 143– 144.
- Sedjari A. (2004), "Public–private partnerships as a tool for modernizing public administration", *International Review of Administrative Sciences*, 70(2), pp. 291–306.
- Verweij S., Teisman G.R., Gerrits L.M. (2017), "Implementing Public–Private Partnerships: How Management Responses to Events Produce (Un)Satisfactory Outcomes", *Public Works Management & Policy*, 22(2), pp. 119–139.
- Witters L., Marom R., Steinert K. (2012), "The Role of Public-Private Partnerships in Driving Innovation", *The global innovation index 2012*, pp. 81-87, http://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2012-chapter2.pdf.
- World Bank (2018), *Infrastructure and Public-Private Partnerships*, <http://www.worldbank.org/en/topic/publicprivatepartnerships/overview>, last verified July 2018.

World Bank (2018a), What is in the PPP Reference Guide?, <https://pppknowledgelab.org/guide/sections/83-what-is-the-ppp-reference-guide>, last verified July 2018.

Zhang Y., Feng J., Yang S. (2017), "Allocation of control rights in the PPP Project: a cooperative game model", *IOP Conf. Series: Earth and Environmental Science*, 69 (2017).

References concerning the ZTE incidence case study

AGCOM (2017), Consultazione pubblica sulle procedure per l'assegnazione e le regole per l'utilizzo delle frequenze disponibili nelle bande 694-790MHz, 3600-3800 MHz e 26.5-27.5GHz per sistemi terrestri di comunicazioni elettroniche al fine di favorire la transizione verso la tecnologia 5G, ai sensi della legge 27 dicembre 2017, N. 205, http://www.astrid-online.it/static/upload/agco/agcom_allegato-5-3-2018-1520268665353.pdf.

Beltrame A. (2017), "5G, Beltrame (Mise): "Italia apripista, saremo hub di servizi innovativi", *CorCom*, December 13th, 2017, <https://www.agendadigitale.eu/infrastrutture/5g-beltrame-mise-italia-apripista-saremo-hub-di-servizi-innovativi/>.

Campeato G. (2016), "Zte si aggiudica la nuova rete di Wind-3. Cinesi sempre più forti in Italia", *CorCom*, December 15th, 2016, <https://www.corrierecomunicazioni.it/telco/zte-si-mangia-la-nuova-rete-di-wind-3-cinesi-sempre-piu-forti-in-italia/>.

CorCom (2018), "Qualcomm vira verso la Cina. Progetto da 2 miliardi per il 5G. Scacco all'Europa?", *CorCom*, January 15th, 2018, <https://www.corrierecomunicazioni.it/telco/5g/qualcomm-vira-verso-la-cina-progetto-2-miliardi-5g-scacco-alleuropa/>.

Cottone N. (2017), "All'Aquila arriva il Joint Innovation Center della cinese Zte", *Il Sole 24 Ore*, October 13th, 2017, <http://www.ilsole24ore.com/art/notizie/2017-10-13/all-aquila-arriva-joint-innovation-center-cinese-zte-143657.shtml?uuid=AEOF8qmC>.

GSMA (2018), "GSMA Announces Winners for 2018 GLOMO Awards", February 27th, 2018, <https://www.mobileworldcongress.com/about/press-release/gsma-announces-winners-2018-glomo-awards/>.

IF/NEWS (2017), "Qualcomm has announced that it has received intense interest to test its X50 5G platform; ZTE has inaugurated a new 5G Innovation and Research Centre in the central Italian city of L'Aquila; etc.", October 10th, 2017, <http://www.instantflashnews.com/en/2018/02/10/02-10-qualcomm-has-announced-that-it-has-received-intense-interest-to-test-its-x50-5g-platform-zte-has-inaugurated-a-new-5g-innovation-and-research-centre-in-the-central-italian-city-of-laquila/>.

News Town (2017), "Accordo Univaq-ZTE: a L'Aquila il colosso delle telecomunicazioni", October 12th, 2017, <http://news-town.it/studentown/17744-firmato-accordo-univaq-zte-il-colosso-cinese-delle-telecomunicazioni-sbarca-a-l-aquila.html>.

Open Fiber corporation, <https://openfiber.it/en>, last verified July 2018.

Principali L. (2018), "5G, il quadro in Europa: alla ricerca di una strategia comune", *CorCom*, May 15th, 2018, <https://www.agendadigitale.eu/infrastrutture/5g-alla-ricerca-di-una-strategia-comune-europea/>.

Ran L., Cheong K-C. (2016), "How Much " State " is in China's State Enterprises? A Case Study of ZTE Corporation in an Era of Reform", *International Journal of China Studies*, 7(3):245-270.

Savelli F. (2016), "Ai cinesi di Zte la gara da un miliardo per la rete Wind-3", *Il Corriere della Sera*, December 17th, 2016, https://www.corriere.it/economia/16_dicembre_18/ai-cinesi-zte-gara-un-miliardo-la-rete-wind-3-9f0816ac-c4a2-11e6-bdd5-b215bf22a380.shtml.

Università degli Studi dell'Aquila (2017), "Annuncio di Conferenza stampa. Presentazione dell'accordo quadro tra l'Università degli Studi dell'Aquila e ZTE Italy", October 10th, 2017, http://www.univaq.it/include/utilities/blob.php?table=conferenza_stamp&id=113&item=allegato.

Zorloni L. (2017), "5G, i test entrano nel vivo. In Italia investimenti per 190 milioni", *Wired*, December 12th, 2017, <https://www.wired.it/economia/business/2017/12/12/5g-italia-190-milioni/>.

ZTE corporation, <https://www.zte.com.cn/global/>, last verified July 2018.

ZTE Italia (2018), "Opening ZTE 5G Research and Innovation Centre", <https://www.youtube.com/watch?v=jbtmTNan3hg>.