Performance Measurement Systems in Public Service Networks. The What, Who and How of Control

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Abstract

This study explores the concept of a network PMS and how it helps in terms of what is being controlled in the network, who exerts control and how this control is achieved. In analysing PMSs, the distinction was made between their hierarchical and their socialising components. An exploratory case study was carried out on a public service network in charge of a local public transport. Findings from the case study are used to reach a preliminary conceptualisation whereby network PMSs are systems consisting of three main building blocks activated on demand by three main network actors and where there is coexistence and blending between hierarchical and socialising practices.

Introduction

This study aims to understand how a PMS (Performance Measurement System) used for controlling a public network is structured. The control of public networks is a complex activity involving a number of difficulties (Agranoff and McGuire, 2001; Milward and Provan, 2003; Dekker, 2004; Kenis and Provan, 2006; and Schillemans and Busuioc, 2015). The first problem concerns the conflicting objectives that come into play between network actors and between the actors and the whole network (Agranoff and McGuire, 2001). The second problem is linked to the lack of a clear line of accountability, since there is no clear distinction between the principal and the agent (Schillemans and Busuioc, 2015) creating difficulties in respect of identifying specific responsibilities within the network (Acar et al., 2008). The third problem is concerned with how actions are coordinated, an exercise necessary to orchestrate network actions and deliver the network output (Milward and Provan, 2003; and Moynihan, 2009; Agostino and Arnaboldi, 2015), which is, at the same time, far from being straightforward because of the many interdependencies among network actors (Mandell and Keast, 2007).

Within this context, PMSs (Performance Measurement Systems) are the most common approach used for network control, as they allow actions to be monitored, problems diagnosed and coordination improved (Atkinson et al., 1997). Yet public network studies available to date provide conflicting views on how important PMSs are in terms of enhancing network control. On the one hand, some authors focus on the importance of measuring networks through a set of indicators that can help policy-makers in allocating funding and verifying whether resources have been used effectively (e.g. Mandell and Keast, 2007). According to other authors, PMSs are not appropriate in a network context, given that collaboration is part and parcel of the notion of a network and this is inconsistent with the whole point of having a network (Kenis and Provan, 2006; and Romzek and LeRoux, 2012). The existence of these contrasting views provides the rationale for this research.

Specifically, we aim to answer three main research questions: What does the network PMS control? Who is in charge of controlling? How is network control achieved in terms of the PMS's hierarchical

and socialising components? Findings are derived from an empirical investigation of a PMS designed for a public transport service network, using interviews, observations and network documents as data sources.

The rest of the paper is structured as follows. Section two contains a discussion on extant literature on PMSs in public networks. Section three includes details about the components of network control ('what', 'who' and 'how'). In Section four, the research method is presented alongside the empirical case of a local public transport network. Section five contains the results, followed by a discussion and the concluding section.

PMSs in public networks

This section examines previous studies on network control, which include two main streams of research, the former strictly focused on performance measures used in public networks, and the latter proposing collaborative relationships as an alternative to control networks.

In the first stream of studies, control is considered to be a set of formal procedures and indicators (Mandell and Keast, 2007). The logic is that 'we must be able to measure the outcomes and performance of networks in order to assess how accountable a particular network is' (Agranoff and McGuire, 2001, p. 311). According to these authors, by measuring network performance, it is possible to answer the question as to 'whether and under what conditions networks are actually performing at a level that justifies the costs of collaboration' (Kenis and Provan, 2009, p. 440). Moving on from this consideration, these studies have been concerned with identifying the best indicators for evaluating 'how good' the network is in delivering a public service, the structure of the network and its outcome (e.g. Mandell and Keast, 2007; and Agostino and Arnaboldi, 2015).

Another stream of network studies, endorsing the same notion of control, criticises instead its role in governing network, because 'networks are, by design, built around collaboration, and the idea of formal control mechanisms is typically viewed as inconsistent with the whole point of having a network' (Kenis and Provan, 2006, p. 228). Research in this stream places collaborative relationships

at the core of managing the network effectively (e.g. van Raaij, 2006). Taking this factor as acknowledged, informal control mechanisms, such as social norms and values shared between the actors working together (e.g. van Raaij, 2006), trust between actors (Edelenbos and Eshuis, 2011) and reputational control (Kenis and Provan, 2006), have all been discussed in connection with their role in supporting network control. Highlighting the importance of informal norms, expectations and behaviour, Romzek and LeRoux (2012) proposed a preliminary theory of informal accountability that can guide the actors' actions in terms of ensuring that the intended results are pursued without having to rely on formal systems.

To summarise, previous studies on network control endorse the narrow view of control based on formal systems, pointing out, on the one hand, their usefulness and, on the other, their shortcoming, showing that informal systems of control are more appropriate. This conceptual choice of what control entails has prevented us from making a complete analysis of PMS in networks, which is the focus of our study. The next section brings in a broader view of control, based on extant studies in accounting, alongside the studies on public network presented above.

The conceptual place of network control between hierarchical and socialising PMS components

In order to explore the configuration of a PMS supporting network control, we conceptualize here PMS in a broader sense according to existing accounting studies (e.g. Dekker, 2004). Accordingly, a PMS has two main components, referred to here as 'hierarchical' and 'socialising' components (Roberts, 1991; and Messner, 2009). Hierarchical control refers to the formal practices that regulate individual and organisational activity, and the adoption of a set of KPIs is strongly advocated to drive and then control the actions of individuals and organisations at a distance. By identifying the KPIs, setting the targets and monitoring the results, PMSs help to control how an organisation is performing. This method is also known as diagnostic control (Simons, 1995), hierarchical organisational form

(Adler, 2001), formal control (Dekker, 2004) and market and bureaucracy type of governance (Ouchi, 1979).

Socialising control recognises the central role of human relationships, introducing an informal approach based on social norms, values and interpersonal relationships. Unlike hierarchical mechanisms where KPIs are placed at the centre of the controlling system, in socialising mechanisms there is emphasis on the interdependencies between relationships, informal coordination and dialogue. This mechanism has been also defined as informal control (Dekker, 2004), interactive control (Simons, 1995), clan mechanism (Ouchi, 1979) and community/trust organisational form (Adler, 2001).

The main difference between these two components within a PMS is that, while both are used for the purpose of improving control over a network, hierarchical control relies on 'contractual obligations and formal organisational mechanisms for cooperation' (Dekker, 2004, p. 31), while socialising control 'relates to informal cultures and systems influencing members and is essentially based on mechanisms inducing self-regulation' (Dekker, 2004, p. 31). The rationale behind the endorsement of the hierarchical or the socialising components lies in the motivation of the individuals involved in providing the service, since individuals are driven mainly by trust or mistrust (Le Grand, 2010). When individuals are driven by mistrust and adopt a prevalently unscrupulous or 'knavish' behaviour, the service provided can be controlled through an approach based on 'hierarchy and control' or on 'naming and shaming' (Bevan and Wilson, 2013). In the former method, control is ensured using indicators, rewards and sanctions, while in 'naming and shaming', ranking tables for service providers are used to ensure control over public services. It is at this level that the hierarchical component in a PMS emerges, with individuals being controlled along clear hierarchical lines and through a predefined set of measures.

Following the opposite reasoning, trust drives individual behaviour and there is no need to control professional people or service providers, since the basic assumption is that self-interest does not come into how they act. Following this 'trust and altruism' approach (Bevan and Wilson, 2013), no control

is required and it is at this level that the socialising PMS practice of dialogue can emerge. In the same vein, there is no controlling agent, since individuals collaborate and behave in accordance with public interest. These studies on how the control of public services can be enhanced (Le Grand, 2010; Bevan and Wilson, 2013) helped us to identify three dimensions of control: what is controlled, who does the controlling and how is the control is achieved (Hood, 2002). These will be endorsed here to investigate the structure of a PMS involved in the process of controlling a public network.

The first element of control concerns what is controlled, and this represents the unit of analysis. The issue of the 'what' is closely related to the control problem of accountability in networks (Agranoff and McGuire, 2001; Schillemans and Busuioc, 2015) since, in order to select the unit of analysis, it is first necessary to clarify who is accountable and for what, setting out clearly defined responsibilities. Following a hierarchical logic, this unit of analysis is traditionally represented by individual organisations. According to the socialising side of a PMS, there is no need to define in advance what has to be controlled at a distance, given that the frequent interaction and dialogue typical of the socialising sphere means that specific controlling elements emerge only on demand, when necessary.

The second element of control refers to the controlling agent ('who' controls), intended as the actor responsible for collecting data and leading network actions. This 'who' is connected with the control problem of conflicting objectives between network actors and between the actors and the whole network (Agranoff and McGuire, 2001). The definition of controlling agent can help in managing these conflicting objectives between actors by setting clear lines of responsibilities within the network and, as a consequence, defining who can exert the power over others. The hierarchical sphere of the PMS suggests that the hierarchical level of an organisation is responsible for actions relating to leading and steering. When moving to the socialising side of a PMS, the controlling agent becomes a shared activity between the top and the bottom of an organisation (Roberts, 1991; and Messner, 2009). Control is enhanced through dialogue among the parties and activities being managed (Dekker, 2004).

Finally, the third element of control refers to how the control is achieved, with all the implications in terms of the network problem of coordinating activities. By establishing tools and methods to achieve control, this leads to network actions also being directed and network activity being coordinated (Agostino and Arnaboldi, 2015). According to the hierarchical side of a PMS, control is enhanced by means of a set of KPIs, the core measurement indicators used in calculations. KPIs are used to measure the efficiency, effectiveness, equity and economy of the object of control (Bouckaert and Van Dooren, 2003). According to the socialising side of a PMS, control is achieved by relying on shared norms, facilitating behaviour and informal practices (Provan et al., 2004; and Romzek and LeRoux, 2012). In a more recent contribution on public networks, a theory of 'informal accountability' was proposed (Romzek and LeRoux, 2012), underlining that the coordination of actions within networks can be achieved through these informal practices, with the underlying fact that dialogue play a central role in network control. These three components of control (the 'what', 'who' and 'how') are used in our investigation on how the hierarchical and socialising elements of a PMSs help to control public networks.

<Insert Table 1 about here>

Research Design

This study adopts an exploratory case study methodology to investigate a public network involved in a local public transport service over a four-year period, from 2009 to 2013. This methodology was selected as the most suitable for exploring how actors use performance measurements in their natural settings and how people create and maintain their social worlds (Neuman, 2000). The wealth of data behind the single case study (Yin, 2003) means that it is possible to enter into the micro-dynamics of the network actors, together with the macro-dynamics of the network as a whole and its associated PMS.

The transport network

The network studied is a local public transport network established at Regional Government level[1], located in the north of Italy. For reasons of confidentiality, we have used the fictitious name of Artemis for this Region. The network consists of the local authorities within the Regional Government, 11 Provinces, 11 Municipalities and 26 service providers. The latter are private companies in charge of delivering the service. The network was set up following a Regional Government mandate in 2002 (Regional Law no. 01/2002), whereby local public transport services had to be integrated throughout the entire Region, requiring the involvement of all the various administrative sections. In practical terms, this meant that all the services in all the Provincial areas in the Region had to be integrated with those provided in the different municipal areas, with the same pricing system and a coordinated timetable for routes between one local area and another. As part of the regulation, a mandated network was to be set up and transport providers were expected to interact and cooperate together in order to deliver an integrated service, something that could not be achieved by the various actors independently.

For the purposes of the study, we have identified two main categories of network actors: network managers and service providers. The Artemis Region and associated Provinces and Municipalities are the network managers. The Region has responsibility for planning and controlling the whole regional (i.e. network) level, while Provinces and Municipalities are responsible for their own specific local areas. The service providers consist of private organisations in charge of the transport service at operational level. One service provider usually covers an entire municipal area, while two to six providers are responsible for delivering the service throughout the provincial area.

[1]At administrative level, Italy is divided into twenty Regions, which are further divided into Provinces. Provinces are, in turn, composed of any number of Municipalities, the basic administrative level.

Data collection and data analysis

Data were collected from a wide variety of sources, including interviews, network meetings attended as silent observers, internal and external documents and media-based commentaries. Interviews were held with local authorities, transport company managers and service user representatives, with a total of 31 interviews carried out over the period 2009 to 2013 (see Table 3). Each person was only interviewed once throughout the period of analysis but, over the same period, we interviewed different people from the same organisations. Interviews were also carried out with network managers and service providers. Service users were also included in the analysis, although, according to Regional Government rules, they did not qualify as network actors. As time went by, however, their role in connection with the network PMS became increasingly important. As a result, we decided to include them in our analysis, and so interviewed one commuter representative and two people belonging to an association promoting users' rights.

<Insert Table 2 about here>

Among the issues investigated were PMS objectives, types of KPIs, PMS documents, threats and opportunities associated to the use of performance measurements and approaches used to control the network activity and results. The interviews lasted on average one hour and were transcribed and textually analysed to identify any interesting patterns. A summary was then sent to each interviewee for further clarification and final approval. Further observations were made during informal discussions at network meetings, where we were silent observers. In total, we put together 16 hours' worth of participant observations and attended four network meetings. We found these network meetings extremely useful, both in terms of observing the network dynamics and how the mechanisms of control were developed, and also because we could talk informally with the network actors, gaining insight from all the organisations involved in the network.

Internal and external documents were another source of data. Included among the internal documents were network meeting minutes, service contracts and quarterly and annual PMS reports. The external documents included national and regional laws, mobility charts, the network actors' websites and data from social media channels. This material was useful for understanding the formal structure of the network and its associated PMS.

The process of data analysis began by examining internal and external network documents in order to gain a general understanding of the network structure, the organisation of local public transport services and associated network PMSs. The initial evidence was completed by the interviews. We transcribed these and manually identified the potential clusters of interest by organising the interviewees' statements around the three elements of control (i.e. what, who and how) and highlighting the hierarchical and socialising components. At the end of this phase, we obtained a preliminary framework for the structure of a PMS used in public networks. We then triangulated this evidence by revising these results with material gained from direct observations, media commentaries and the initial theory. As a final step in the data analysis, the information that had emerged from our framework was then corroborated through informal discussions with the network participants to gain a better understanding of the topic and clarify any points where necessary.

The initial hierarchical PMS

When the system was initially introduced to control the network most emphasis was placed on its hierarchical side. The organisation in charge of controlling the network was the Regional Government (the 'who' of control), which had determined the PMS's top-down structure when the network was first established:

> The Region will define the Key Performance Indicators, metrics and frequency of reporting relating to the collection and transmission of public transport data. (Regional Law no.22/1998, Article 19, paragraph 4)

This sentence sets out the hierarchical nature of the PMS and the leading role of the network manager. Such a hierarchical system was supposed to simplify the Regional Government's decision-making process, as made clear in another formal document:

> Data relating to customer satisfaction, efficiency, effectiveness and service quality are necessary to support Regional decisions about the distribution of financial resources among local regulators. (Regional Law of 2002, Article 15)

The core component of this PMS were the KPIs (the 'how' of control), which were detailed in the service agreements between providers and regulators. A set of more than 50 structured KPIs was prepared, with providers retrieving the required information from their own organisational PMSs and then distributing them formally through quarterly and annual reports.

Service providers were required to publish an annual mobility chart on their websites to inform service users about their performance. Following the hierarchical logic of 'controlling at a distance', bonuses and penalties were introduced by the network managers and linked to the KPIs, so that the target associated to each indicator was defined by the regulator at the beginning of each year. An organisation achieving this target would receive a bonus to their funding for the following year, while not achieving the target implied getting a penalty (i.e. reduction in funding).

In moving towards a network PMS, the Regional Government also detailed 'what' was to be controlled through the KPIs (i.e. the unit of analysis), making the distinction between organisational level and the service as a whole. KPIs relating to the transport data were collected at organisational level (service providers) and for the entire Regional area (the whole network), respectively. Network data were obtained by assembling (summing or calculating averages) data from each service operator (i.e. the network actor level). For example, data on the number of passengers for the service as a whole was obtained by summing together all the data from the individual network actors' PMSs.

This network PMS was initially introduced to control the network, and this was a hierarchical system, as the set of KPIs and formal practices used to define data and make reports were clearly indicated. The Regional Government ('who') was able to control the network both in terms of whole network and at the level of individual network actors ('what'), using a set of KPIs, with the results included in formal reports, and a system of bonuses and penalties ('how').

From the perspective of the Regional Government, this hierarchical system was complete and could provide network stakeholders with all the information they needed. Users were given information from each service provider in the form of mobility charts. Service regulators received quarterly and annual reports from the service providers operating in their catchment area and the Region was able to gain an overall view of the entire network structure.

The revision of the network PMS

This initial hierarchical PMS gradually evolved once the network became operational. At this point, three elements associated with network relationships emerged as the main determinants in terms of the evolution of the initial PMS: competition, heterogeneous staffing skills and low trust in the network actors' performance.

The first determinant in the evolution of the network PMS was the rivalry between service providers, since they were not particularly willing to collaborate or share information with each other, leading to problems in connection with coordinating actions between the network actors. An interview with the general director of a small transport provider supplied evidence about this competitiveness:

> In order to align my timetable to that of the other bus companies, I asked them [referring to the largest bus company] for their timetable for that specific transport node. But I have not received any timetables, the company did not want to give them to me. In the end, I was forced to check them out on their website and, even then, they were out of date. (General Director – Town E Province)

Although smaller providers were interested in establishing collaborative relationships with the larger companies, they preferred to hang onto their information and not let it go beyond their organisational boundaries. This unwillingness to cooperate surprised the network managers, who had expected that greater interaction between service providers would occur naturally through the hierarchical PMS. The network actors' initial reaction to the first PMS highlights the hierarchical PMS's potential failure to address the network control problem of coordinating actions between actors.

With service providers being unwilling to cooperate, the Regional Government decided to strengthen the hierarchical side of the PMS, acting on the 'what' and the 'how' of the control. The 'what' of the control was expanded by introducing another unit of analysis, that of network relationship, while the 'how' of the control was expanded to include ad hoc KPIs that would monitor the quantity and quality of relationships between service providers. In the words of the network managers, these additional KPIs were intended to simplify the control over both the output of the mandated collaboration (in terms of the level of integration between two service lines) and the network actors' ability to interact with each other (in terms of the quantity and quality of the relationships involved). The network managers' reaction underlined their desire to ensure network accountability. In order to address the difficulties in cooperation, the hierarchical PMS was further tweaked with the introduction of KPIs to monitor relationships, simultaneously acting on network accountability since these indicators were used to make network relationships more accountable.

The second determinant in the evolution of the network PMS was the heterogeneous mix of staffing skills held by the network managers and providers - where the former are local authorities and the latter private companies. While the private providers had significant experience in measuring and managing a hierarchical system involving KPIs, this was not the case for the network managers, as they had only encountered hierarchical PMSs for the first time when the service network was set up. Our interviews highlighted the service regulators' enthusiasm for the PMS, especially for several aspects:

> The high variety of KPIs means that, for the first time, it will be possible to understand how the service provider is performing and to assign bonuses and penalties on the basis of these values. This will be useful when encouraging providers to improve their service. (Mobility Manager – Provincial Administration - Town A)

The network manager considered the hierarchical PMS to be a central element of network control, serving various functions, from providing support to decision-making to the legitimisation of decisions and to underpin provider motivation. This positive attitude towards the hierarchical PMS was not, however, found among the service providers, who complained about the system, mainly because it 'denoted a lack of competencies and skills for managing the PMS on the part of service regulators' (words of the interviewee). One provider complained about the large number of measures introduced:

> We have gone from having no control and almost complete freedom in managing our operations, to control over everything! (General Director – Town D, Transport Company)

Another provider, on the other hand, criticised the subjectivity of some performance measures:

> This is like a restaurant menu, where everything must be verified subjectively. Think of the indicator measuring the cleanliness of vehicles. What is a good level of cleanliness? If you ask someone in Milan they will give one answer, if you ask someone from another place, they will give another. (CFO- Town C, Transport Company)

Because of the difference in skills among service providers and network managers in terms of how they manage accounting data, an adjustment was made to the PMS with respect to the 'how' of control. Shared practice and informal behaviour gradually developed, leading to a socialising side emerging alongside the hierarchical system and modifying the previous network PMS. The socialising practices were repeated when the service providers saw that the hierarchical network KPIs were not adequate when measuring particularly subjective aspects, such as level of comfort in

vehicles or their cleanliness. Informal face-to-face meetings and phone calls were held with the service regulators to share informal and confidential internal data in the hope of addressing the problem. In some cases, bonuses and penalties were no longer linked to the KPIs, which took on a merely informative role within the system. In other cases, KPIs were removed entirely. This highlights the contribution made by the socialising component of the PMS in terms of mediating the network actors' conflicting objectives. Aspects relating to the PMS were discussed at informal meetings usually held twice a year between the network managers and, on these occasions, the system was revised in an attempt to reduce the level of conflict. At the beginning of the period, the discussions concentrated on validating the existent KPIs and agreeing on the system of bonuses and penalties, at the end of the year, the discussion covered the results achieved and the reasons behind any areas below par.

The service providers' behaviour in this respect underlines that their attempts to adjust the network PMS go beyond simple self-interest. On the one hand, they were driven by self-interest to revise the PMS and reform a set of distorted (in their words) measures used as a reward mechanism, while, on the other hand, their revision work helped to bring about systematic improvements to the whole PMS system.

The third determinant in the evolution of the PMS was the service users' reduced trust in data published on the hierarchical network. Users were not part of the public transport network and were not considered to be network actors, according to the initial regulation set by the Region. They started, however, to play a pivotal role after finding that the hierarchical PMS did not address their expectations. Users initially criticised the PMS reports, complaining that the data included in the mobility charts published by transport providers were not reliable:

> It seems that more care is spent on stressing positive data than on providing reliable and trust-worthy information. (Commuter Representative 1)

The users' complaints were mainly directed at the fact that the hierarchical PMS was not being subjected to formal auditing, but was simply self-certified by the service providers. To overcome the barrier of low trust in the data published, users started developing their own control system, which led to a further review of the PMS, with reference to the 'who' and 'how' of control. Service users took to internet and social media to find their main sources of data, becoming additional controlling actors for the network activity ('who' controls). Differently from the other network actors, users did not only collect numbers (i.e. KPIs), they also included narrative and images in their system. Consumer groups and commuter representatives used the issues raised on a daily basis by passengers - mainly through social channels but sometimes through emails send to consumer associations - to learn more about how local providers were performing, contributing, therefore, towards making the whole service network more accountable. To give an example, the comment below was posted on Facebook by a regular user of Town B's bus service:

> Yesterday morning there was a 40 minutes' delay and, today, I have been waiting for 15 minutes. Why should I pay for a season ticket?

Passengers often took pictures to illustrate their complaints, especially about the state of buses and bus shelters, and there were also shared on social media. Complaints, personal experience and information on how the service was performing, in the form of text or images, were shared with other users on Facebook, Twitter or other social media, rather than through formal reports.

When users gained confidence in their own control system, they started to use the data they had assembled in a formal way to influence the politicians and managers making decisions about the network. They also showed that they were more than capable of using and managing numbers. For example, blogs and emails were passed on to the regulator as evidence of the low punctuality and reliability of some of the bus lines. In keeping with the service providers' reactions, the service users'

behaviour also contributed to the process of edging the earlier PMS towards a new type of control system, going beyond their own self-interest with the intention of improving the actual PMS system. User involvement led to further adjustments to the network PMS, so that the socialising and hierarchical components became integrated and the socialising practices - in the form of narrative and images obtained from discussions on social media – were formally introduced as means to exert control over the network activity.

Towards a conceptualization of a network PMS

The results illustrated in the previous sections showed how the initial PMS were gradually adapted to address the need for control in the public network. These insights support a preliminary conceptualization of a PMS used in a public network. One aspect that emerged is that a network PMS is not a monolithic concept, but rather is composed of three main building blocks: a centralised PMS (which is the core component), a shared PMS and an externally-driven PMS. The intersection between these three systems supports the process of controlling a network because many of the controlling levels involved (the 'what') do not enter into a rigid hierarchical relationship, but interact through multiple mechanisms (the 'how'), these being the hierarchical and socialising practices (see Figure 1). Each of the three systems involves different and changeable sets of network actors (the 'who' of the control).

< Insert Figure 1 about here>

The building blocks are activated by actors when network relationships are perceived to have altered in terms of increased competition, varying degrees of skills among the network actors and reduced trust in the network data.

The core component of a network PMS is a *centralised PMS*, which is a hierarchical PMS with KPIs collected and reported on a periodical basis. This system is defined and used by the network managers

to control the entire network, in terms of the service output and the contribution made by each organisation to the network activity. Compared to PMSs implemented in an organisational setting, (Dekker, 2004), our findings showed that a centralised PMS contains an additional formal element for controlling networks, that of relationships. In public network literature, relationships are seen as an informal element of control (Provan et al., 2004; and Romzek and LeRoux, 2012), but here they become a unit of analysis for the centralised hierarchical component. In this way, the network managers not only can control the performance of the input and the output, but also monitor the status and evolution of the collaboration. This is particularly important at the early stages of the network, and it has a crucial role in tracing whether competition prevails over collaboration, something that potentially occurs in many public networks (Thomasson, 2009; and Saz-Carranza et al. 2015).

The second building block is the *organisationally-driven* PMS, which consists of the socialising component of the PMS used to control network organisations. These socialising practices are the informal approaches and shared norms that exist among the network actors, in this case, the various informal meetings and face-to-face talks. Network participants discussed and shared informal and confidential information about service performance, in part to highlight any errors or misunderstanding arising in connection with the centralised and hierarchical PMS. These socialising practices originated from the need to discuss and align the various practices that were in place to measure and quantify the contribution made by each organisation to the network, a factor that was apparently linked to the wide variety of skills found among the network actors. Staffing skills, and in particular leadership skills, are seen as crucial in network management (Silva and McGuire, 2010), with some authors recognising that diversity among these skills is a source of network instability (Johnston and Romzek, 2008). Our study also showed that technical and other specific skills (i.e. accounting, information systems) can lead to ambiguity and information asymmetry, which then needs to be rebalanced. Here, we found that socialising practices can help to rebalance this heterogeneity.

The third building block is the *externally-driven PMS*, which relies on hybrid elements overlapping the socialising and hierarchical spheres. Socialising practices appear in hybrid form within the hierarchical sphere when the public uses pictures and messages to complain about performance and to express their feelings about their limited trust in how network actors contribute to the network PMS. This is the moment when the socialising side of the PMS (i.e. narrative and images from social media) is formalised within the process of communicating with network managers and actors, therefore enhancing the PMS's hierarchical side. The thought process behind the development of this hybrid PMS is based upon the users' low expectations about the reliability of the information provided by the centralised PMS, which is further compounded by what is, in the users' eyes, a purely ceremonial auditing procedure to verify its content. To counterbalance this aspect, service users developed their own system, and this was gradually integrated into the whole concept of network PMS. Although the aim of our investigation was not to explore the aspect of trust in network PMSs, we found that, when trust in the data provided by the network manager is low, then service users act to implement a new PMS.

Our findings about the components that constitute a PMS for a public network highlight the fact that a PMS is multi-layered arrangement in terms of the what, who and how of network control. Through its centralised, shared and externally-driven forms, the network PMS can be used to control three main network layers (the what), which are the entire network, relationships and individual network organisations. A number of different actors are in charge of activating these building blocks (the who) and these are the network manager, the individual organisations and the service users. Control is achieved by creating balance between the hierarchical and socialising components (the how). Each of these building blocks is activated by different organisational actors when the relationships connecting them are altered in terms of competition, staffing skills and trust. This empirically-derived network PMS has some implications with reference to the problems of control typical of public networks. With regards to the potentially conflicting objectives (Agranoff and McGuire, 2001), it emerged that a PMS's hierarchical component is not sufficient to address multiple divergent

objectives, whereas its socialising component can promote dialogue between the many network actors, helping to overcome these numerous conflicting objectives. Looking at the lack of a clear line of accountability (Agranoff and McGuire, 2001; and Schillemans and Busuioc, 2015), we can see that the three building blocks of the network PMS are useful in terms of isolating specific responsibilities. The centralised PMS isolates the contribution of individual organisations and their joint activities, the organisationally-driven PMS draws on socialising practices to underline the fact that each individual organisation is accountable, while the externally-driven PMS isolates the contribution of the network as a whole from its contribution in delivering the required public service. Finally, with reference to the problem of coordinating the many actions (Moynihan, 2009; and Agostino and Arnaboldi, 2015), the centralised PMS contains additional KPIs having the function of measuring network relationships and ensuring that the act of controlling network relationships is driving the network actors to work together. This result is counterintuitive to the existing literature on public networks that cover the aspect of collaborative actions being at the basis of public networks (Romzek and LeRoux, 2012). In several studies on public networks (e.g. Provan et al., 2004; Kenis and Provan, 2006; van Raaij, 2006; Edelenbos and Eshuis, 2011; and Romzek and LeRoux, 2012), the idea has been advanced that collaboration is the central issue for network activities. It is often argued that the collaborative actions taking place within the network ensure that the network results are achieved without the need for further control mechanisms (Kenis and Provan, 2006). The empirical evidence of this study has shown that the idea of collaboration does not hold on its own if actors are not inclined to collaborate. In this case, by further accentuating the role of the hierarchical component of a PMS, it is possible to ensure control over the public network.

The next section contains reflections of a more general nature about the contribution of these findings to extant literature.

Conclusion

The aim of this study was to enhance existent knowledge on how public networks are controlled, exploring how a PMS is structured, in terms of hierarchical and socialising components, and how it can support the overall control of a public network (i.e. what is controlled, who does the controlling, how the control is achieved). The main result of the paper is that a network PMS is not a monolithic concept, but a collection of hierarchical and socialising components centred around a traditional organisational hierarchical PMS. The driving element used to activate these hierarchical and socialising components are network relationships. Competition among network actors activate another hierarchical element in the form of KPIs used to control relationships while working on the problem of network accountability (Agranoff and McGuire, 2001). The wide variety of skills among network actors drives the socialising component, so that organisations and the network manager interact informally to control the network, activating the organisationally-driven building block of the network PMS. This building block mediates the network control problem of conflicting objectives among the actors (Agranoff and McGuire, 2001) because of the breadth of socialising practices based on dialogue. Furthermore, the low level of trust in how network actors contribute to the network PMS is the driver to develop the externally-driven PMS with its blend of hierarchical and socialising PMS components.

These findings contribute to existing literature in several ways. First, our results concerning the coexistence and combination of hierarchical and socialising PMS contributes to the literature on public network control. In several network studies, the contention is that hierarchical components play a primary role in supporting network control (e.g. Mandell and Keast, 2007), while others criticise these approaches preferring informal systems (e.g. Romzek and LeRoux, 2012). Our study provides evidence that, not only do hierarchical and socialising components coexist and occur simultaneously within networks, but that they also blend together when used in practice. Hierarchical systems are the traditional starting point available to the network manager. The socialising component is typical of the shared PMS and it is activated when organisational actors feel that the network actors'

skills concerning accounting are very heterogeneous. Finally, when service users join the network, this activates an externally-driven PMS, in which socialising practices based on narrative and images derived from social media become mixed with hierarchical approaches and used to pass the data on to network actors and the network manager. This result regarding the centralised, shared and externally-driven PMS adds to extant literature on network control, by presenting the concept of a network PMS with hierarchical and socialising components that can enhance control. This finding opens the field to further research on the role of the PMS in addressing network control problems. Our results show that the problem of conflicting objectives between network actors has been managed by exploiting socialising practices. The problem of the actors' cooperation has been managed by adding a further dimension, that of the control of network relationships, while the problem of network accountability has been addressed through the informal interventions made by service users. These results reveal some preliminary insights into the connection between PMS and problems of control that deserve further attention, for example, investigating the causal relationships between each individual PMS component and their effect on network problems. Furthermore, the externally-driven PMS highlights the emergence of a new mixed PMS configuration that is open to all (users and general public) due to the wide diffusion of social media. At the same time, this mixed PMS is becoming more formal because of the formal methods used in data reporting.

The second contribution relates to the fact that some categories of actors become involved on purpose to improve the PMS. While there are several insights into the individualistic behaviour of actors acting to alter the system through personal interest (e.g. Dias and Maynard-Moody 2007; and Soss et al., 2011), our results highlight that there is a tendency among some actors who want to modify the PMS simply to improve the system, rather than for any self-motivated purpose. It was found that both service providers and users act to improve the system. Adjustments to the system made in this way by the actors open the way to further investigations about the reasons behind unexpected responses when revising performance in public networks. Connected to this issue, when social media data are adopted by users as an instrument to enhance performance management and control, this can help to

blur the differences between the hierarchical and socialising components in a PMS. If KPIs are widely recognised as being the backbone of hierarchical control, making control at a distance easier to achieve, when elaborating these measures, starting from informal conversations between users, it becomes difficult to distinguish between the socialising and the hierarchical components. This finding suggests that PMS is becoming a blended form encompassing both hierarchical and socialising components.

The third contribution concerns the role of service users in public networks. While extant studies on public networks mainly considered users as passive network players receiving the service, our study identifies users as active players within a public network, in charge of controlling the delivery of a public service. The idea of the users' involvement in controlling the service is not new in the broader literature on controlling arrangements, where it is often known as 'choice and competition' (Bevan and Wilson, 2013). This approach is used to underline the fact that users are empowered by being able to select among several providers and, therefore, can push towards better service performance. The active role of users as controlling agents in public network expands on the debate about the suitability of setting up a formal control system for the network. Even with no formal PMS, according to this study, users will become involved in controlling a public network service by collecting the narrative and images that reflect aspects of a weak service. These findings seem to suggest that network control is not only driven internally, but that, within a public network, it is a practice driven both internally and externally.

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List of tables

DIMENSION OF CONTROL	**PMS CONSTITUTIVE COMPONENT**	
	Hierarchical component	*Socialising component*
What	Organisations Individual actors Whole network	Different aspects (on demand)
Who	One individual at the top of the hierarchy	Shared among the top and the bottom Based on dialogue between the parties
How	KPIs Targets Reports	Shared norms Facilitative behaviour Informal practices Collaborative relationships

Table 1: Dimensions of analysis

Network actor	Name	Role of the interviewee	Year of the interview
Network managers	Artemis (Region)	1 Director of the Infrastructure and Mobility Department	2009
		1 Director of the Regional Public Transport Tariff Department	2012
	Provincial Administration – Town A	1 Mobility Manager	2010
	Provincial Administration – Town B	1 Mobility Manager	2009
	Provincial Administration – Town C	1 Mobility Manager	2011
		1 Councillor for Transport	2013
	Municipal Administration – Town D	1 Mobility Manager	2010
	Provincial Administration – Town D	1 Mobility Manager	2011
		1 Councillor for Transport	2013
	Provincial Administration – Town E	1 Mobility Manager	2009
	Municipal Administration – Town E	1 Mobility Manager	2010
		1Town Councillor for Transport	2013
Service providers	–Town E Municipality–Transport Company	1 CFO	2009
		1 Business Analyst	2010
		1 Strategic Planner	2013
		3 Operational Managers	2011
	–Town C Municipality – Transport Company	1 Operative Director	2012
		1 CFO	2011
	–Town C Province – Transport Company	1 General Director	2013
		1 CFO	2012
		1 Operative Director	2013
	–Town E Province – Transport Company	1 General Director	2011
	–Town D Municipality - Transport Company	1 General Director	2009
	–Town A Province – Transport Company	1 General Director	2010
		1 Operative Director	2010
	–Town D Province - Transport Company	1 General Director	2012
Service users	Users' Association	1 Director	2013
		1 Vice-Director	2012
	Commuters	1 Spokesperson	2012

Table 2: List of Key Informants