PUBLIC-PRIVATE PARTNERSHIPS FOR SUSTAINABLE INVESTMENTS IN SMART HOSPITALS

Laura Martiniello
Universitas Mercatorum, Roma
Roberto Moro Visconti
Università Cattolica del Sacro Cuore, Milano

Roma, 12-13 Dicembre 2018

Research question

This paper discuss the usefulness of PPPs for implementing smart hospital investments, demonstrating that PPPs fit with risky high-tech investment patterns.

The research hypothesis is:

- In the presence of growing healthcare needs and costs (that contrast with public budget constraints) technology creates monetary value (optimizing scarce resources) and improves quality of cares; but the public stakeholder may lack enough resources and knowledge to autonomously procure and manage technological (smart) solutions.

  Private skilled providers may be useful?

  How to reshape healthcare strategies?

Background

- ✓ Healthcare investments present growing sustainability issues, due to the ageing population, and budgetary pressures.
- ✓ Public authorities must find innovative solutions to foster sustainable investments, outreaching underserved patients that may either be cured at home or in “patient-centered” hospitals (Gabutti *et al.,* 2017).
- ✓ Being innovative technologies expensive and uneasy to conceive and manage, can PPP agreements overcome these criticalities and ensure investments in innovation?

Literature Review

SMART HOSPITALS

- ✓ A smart hospital relies on optimized and automated processes built on an ICT environment of interconnected assets, particularly based on Internet of things (IoT), to improve existing patient care procedures and introduce new capabilities" (ENISA, 2016).
- ✓ Digitization of services and consequent network interaction is a powerful driver of patient-centered value co-creation (Rantala and Karjialuoto, 2016). IoT sensors nurture big data (Dimitrov 2016) that have increasing applications in healthcare (Andreu-Perez *et al*., 2015; Archenaa and Anita, 2015; Bates *et al.*, 2014; De La Torre Diez *et al*., 2016; Li *et al*., 2016; Malik *et al*., 2016).
- ✓ The remote care system is the activity best able to reduce health costs, for example through remote cardiac monitoring and remote monitoring for chronic diseases like diabetes. Remote patient monitoring is a cost-effective strategy (Crossley 2017) that can transform in-patients into home-patients.
- ✓ New medical technologies reengineer business models and help commissioners, clinicians and patients to make informed decisions (Bullen et al., 2017).

Literature Review

PPP SCHEME

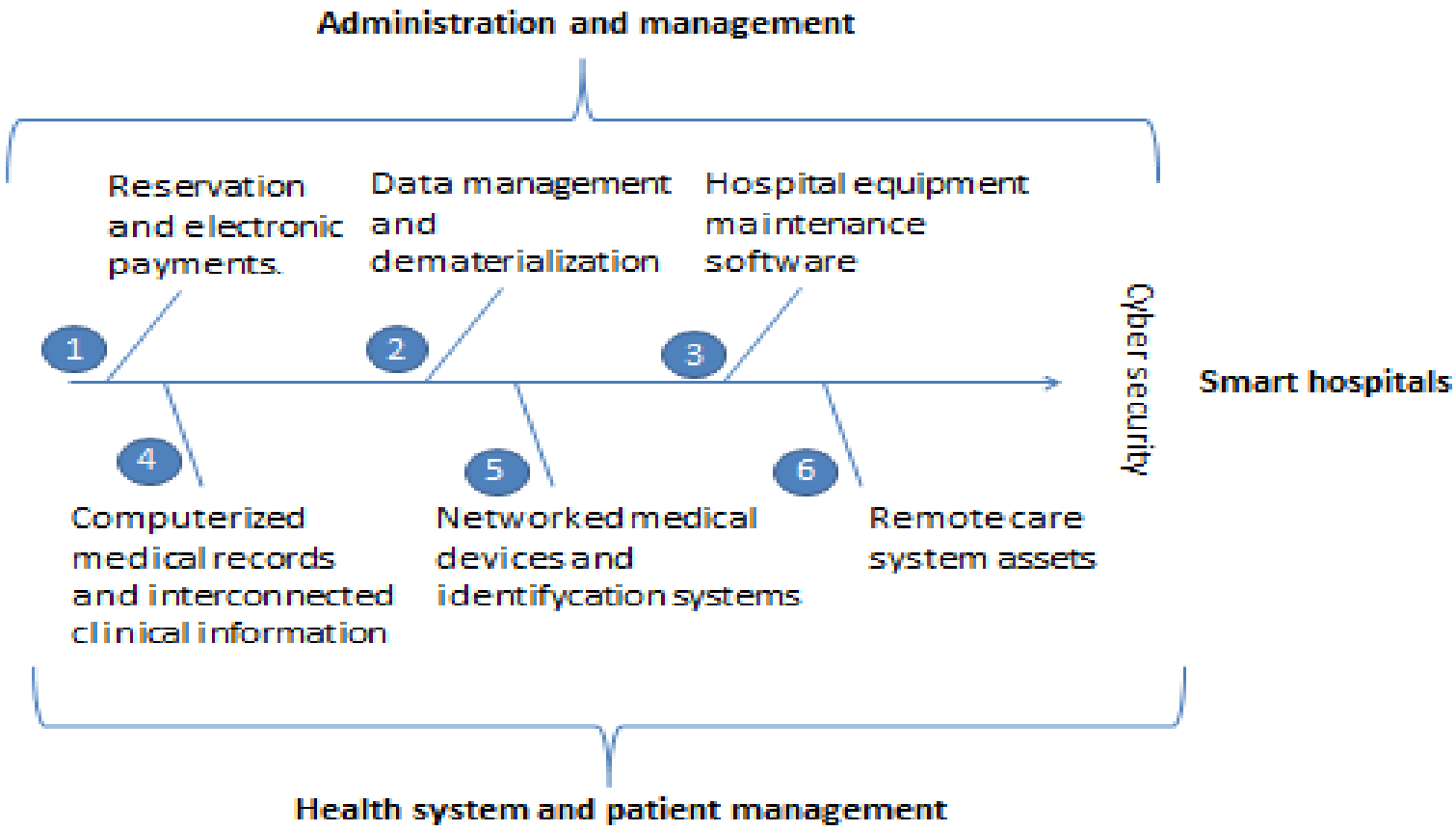
- ✓ In literature some authors (Barlow *et al*., 1997 and 2000; Slaughter, 2000, Leiringer, 2006) found an unwillingness of the private partner to assume any additional risk often associated with innovation. Barlow, Kobler-Gaiser (2008) argue that under traditional PFI it was difficult to achieve agreement on the introduction of innovative ideas because of a separation of responsibilities between the project consortium and clinical operations.
- ✓ On the contrary other authors think PFI is a suitable instrument for financing of innovation (Chirkunova *et al.,* 2016).
- ✓ Grimsey D., Lewis M.K., (2002), Evaluating the risks of public private partnerships for infrastructure projects criticized its inability to properly transfer risk, often producing an on-balance accounting treatment of hospital infrastructure.
- ✓ Shaoul et al. (2008) criticized the affordability of the availability payment as a critical long-term consequence of PFI schemes where private remuneration (also considering the public grants and the revenues from “hot” commercial operations) may become hardly sustainable.

SOCIAL IMPACT INVESTING

- ✓ **Social investments (Costa G. 2012)** concerns preventive policies that can generate a future return, jointly promoting economic efficiency and social justice.
- ✓ **New financing and paying mechanisms** as Social and Development Bonds and Impact Bonds (SIBs/DIBs) have been studied to find viable solutions in a marked-based reform of health (Amy et al. 2018, Wang et al. 2018, Laing et al. 2017; La Torre and Calderini, 2018).
  - SIBs/DIBs are two tools that can be characterized under Results-Based Financing (RBF), focusing the allocation of money to social programs that yield effective results.
- ✓ **New evaluation tools** are proposed in literature. Social Return on Investment (SROI) methodologies has been proposed to systematically account for broader outcomes of interventions and the value for money of such interventions in health. In particular, some authors (Aduragbemi Oluwabusayo B.T. et al. 2015) consider SROI a very relevant and applicable measure, for a shifts from "output" to "impact" and from "generous giving" to "accountable giving".

Descriptive analysis of the phenomenon

The perimeter of innovation



The investment perimeter represents the balance sheet structure of the private SPV that depends on the characteristics and the physical / intangible assets of the healthcare facility.

Expected savings

✓The use of telemedicine for chronic diseases (such as diabetes and asthma) can reduce direct healthcare costs between 22 and 41%, with an average of 30% (Società internazionale di telemedicina, 2017).

✓In Italy where total health expenses represent (in 2016) 9% of the GDP, a 30% reduction on chronical disease expenses could ensure savings higher than 14,25 billion euros equal to 10% of the total health expense and about 1% of the GDP.

✓**There are enough economic and social incentives to proceed in this direction…..but how……..**

Main themes

1. Additional risks to transfer and related remuneration.
   - how smart hospitals PF can ensure a better risk transfer providing at the same time an elevated level of innovation?
2. New interpretation of traditional PPP risks.
   - Mainly construction, availability and demand risks
3. New governance mechanisms
   - Outline new governance mechanisms in which the role and responsibility of each subject are contractually identified, remembering that the private partner bears an additional operational risk.

1. **Additional risks to transfer and related remuneration of <u>new risks</u>.**

   In smart healthcare, innovation is at the base of the PPP, being contractually stated from the beginning of the awarding procedure.

   Smart PF schemes must be designed to minimize contractual uncertainties, envisaging a clear risk transfer.

   - Not every operator is able to ensure innovation, it become central how to identify and select these operators.
   - Traditional procurement could be not suitable.

2. New interpretation of traditional PPP risks

Construction risk	-The SPV is mainly a construction company. -The contract allocates construction risks on the base of a quasi- standard risk matrix.	-The SPV include partners with an expertise in smart technologies and IoT (es. medtech companies). -A coordination committee with public/private representing ensure coordination in design and construction phases. A new risk matrix is provided.

Descriptive analysis of the phenomenon

Risk transfer and PPPs

Risks	Traditional PFI	Smart PFI
Availability risk	Transfer of the following risks: 1) availability of the infrastructural assets (rooms, operational rooms, etc.). 2) maintenance costs of the buildings 3)maintenance costs of the Equipment	Transfer of the following additional risks: 1-Reservation health services on mobile and electronic payments 2- Data management and dematerialization. 3- Hospital equipment maintenance 4--Computerized management of medical records for an interconnected Clinical Information Systems 5-Hospital equipment maintenance software to optimize technical control. 6-Remote care system management 7 - Cyber security
Demand risk / commercial services	Management by one or more traditional operators	Integrated and automated management of newsstands, vending machines for drinks and food, advertising inside the hospital, rental of televisions and other devices for patients, supplementary services to improve the hospitality.

3. New governance mechanisms

- ✓ Risk can be softened, making it flexible, i.e., linked to performance and results. This strategy reduces private rents (free riding) but also allows for higher compensation, whenever it is deserved.
- ✓ Smart PF sustainability can be partly based on availability payments in which risks are ultimately operational, intrinsically manageable and dependent on the performance and management of the private partner.

- ✓ RBF can be based on input (pay for services), output (pay for useful results) or outcomes (pay for impact).

  This approach must be associated with payments mechanisms as:

  1. Fee-for-Service: Providers are paid a fee for each service that they render to a patient;
  2. Case-Based Payments: Providers are paid a fee for each treated case, independently of the type or intensity of services that are required and rendered;
  3. Capitation: Providers are paid a fixed amount for each person enrolled in their care and are expected to render all the services needed by that individual during the term of enrollment.

Conclusion

- Smart investments imply higher operational risk, aggravating public-private sharing issues.

- Public players transfer more standard and technological risk to the private actors, to compensate it with extra-returns, even to soften bankability issues. But extra public payments face the budget pressure.

- ✓ A solution to this short circuit can be represented by the savings and efficiency gains that technology produces, reshaping consolidated business models in the direction of optimal risk allocation and pay for “performance” through RBF.

Implication and Limitation

Implications

- Tips for policy-makers and managers for implementing smart hospitals investments through PFI deals,
- Describe how overcoming some of the adverse effects and limits found in traditional healthcare PFI, mainly related to inability to transfer risks, and to ensure innovation.
- Describe how avoiding the waste of public money and optimizing the benefits of Public-Private Partnerships (PPPs) with patient-centered value co-creating stakeholders.

Future research directions

Future research avenues should address the government culture and purchasing methods shift necessary to promote technological innovation.

Thank you for your attention

l.martiniello@unimercatorum.it