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Exploring The Role Of Professional Networks On The Diffusion Of Medical Technologies: An Empirical Study On Robotic Surgery

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Agenda

- Background
- Objective
- Materials and Methods
- Results
- Implications
- References

Background

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Medical technologies in healthcare modern systems

- Major components of health care costs
- Essential drivers for growth and development (*Tovar Jalles, 2010*).
- Significantly well-connected with the dissemination of Evidence Based Medicine approach (*Dopson et al., 2010)*

Pattern of diffusion

- Attributes and specific characteristics of the technology (*Greenhalgh et al., 2004; Damanpour, 1991)*
- Institutional determinants (*Cappellaro et al., 2011, Maguire 2002)*
- Organizational factors (specialization, professionalism, formalization, managerial tenure toward the change; *Damanpour, 1991; Berwick, 2003)*
- ***…Professional factors?????***

Whereas institutional and organizational determinants have been widely addressed empirically, there is still a scant of knowledge on how professional factors and predictors influence the adoption of medical technologies

Objective

How inter physician relations affect the adoption of a medical technology?

Robotic Surgical System

Research Project financed by the Italian National Agency for Regional Healthcare Systems (Age.Na.S) entitled *"Tools and methods to regulate the processes of technological, clinical and organizational innovation in the NHS. An integrated system of research"*

Materials and Methods (1/2)

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Literature review

Identification of different specialties and interventions and selection of all hospitals' clinical departments representing potential adopters in the Italian NHS

Design of a sociometric questionnaire

Submission to all clinical directors of the selected departments from July 2010 to January 2011

Materials and Methods (2/2)

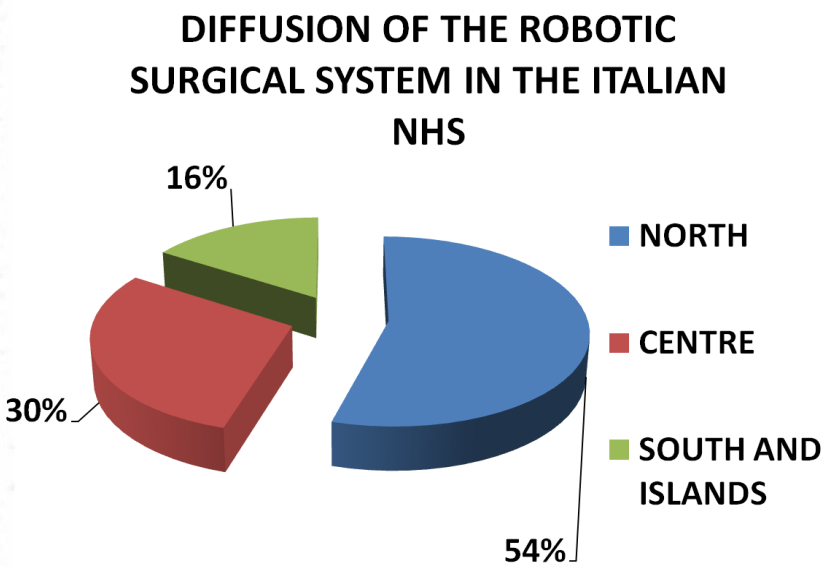
- **Data collection**
  - Physicians' attributive characteristics (e.g. *gender, age, tenure, specialization, etc.*)
  - Degree of utilization (*number and type of patients treated with the robotic surgical system*)
  - Perception of the relative importance assigned to various determinants of the adoption
  - Social networks through which professionals interact and exchange information about the selected technology

Each physician was asked to name colleagues or other professionals both in and outside his or her hospital organization with whom he or she interacts through relationships based on exchanging consulting and advice

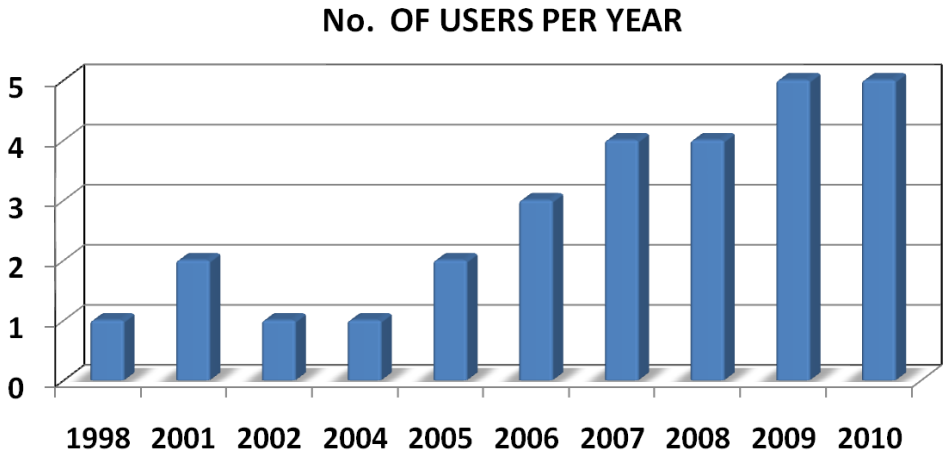
- **28 surgeons** provided completed answers to the questionnaire

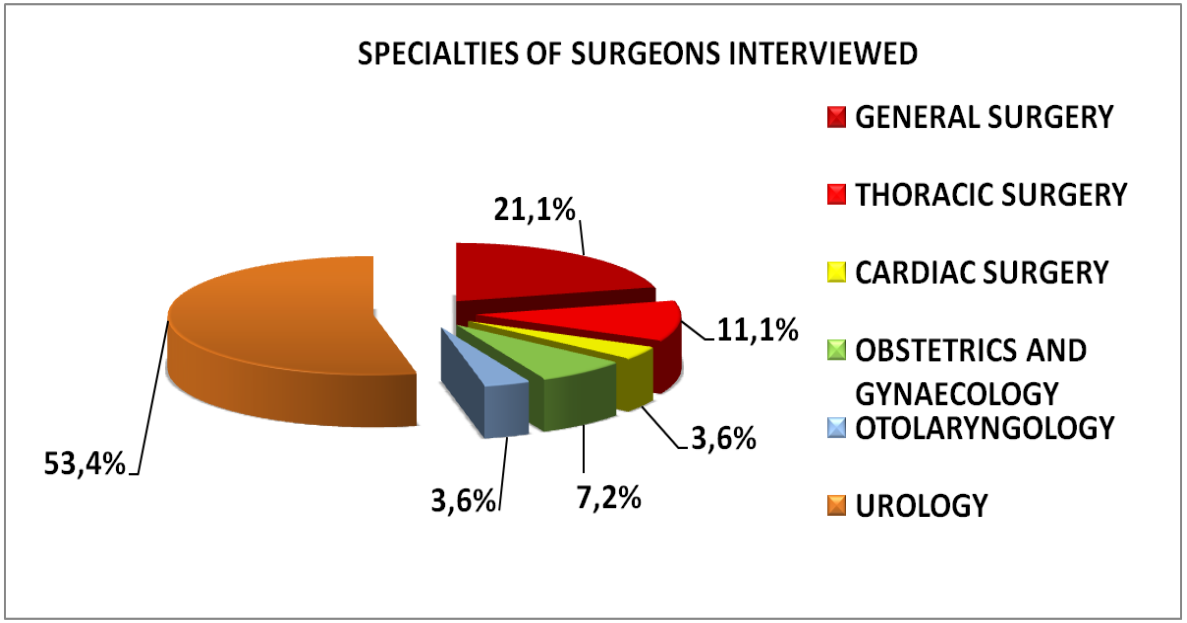
Results (1/3)

44 Robotic Systems were sampled in the Italian NHS

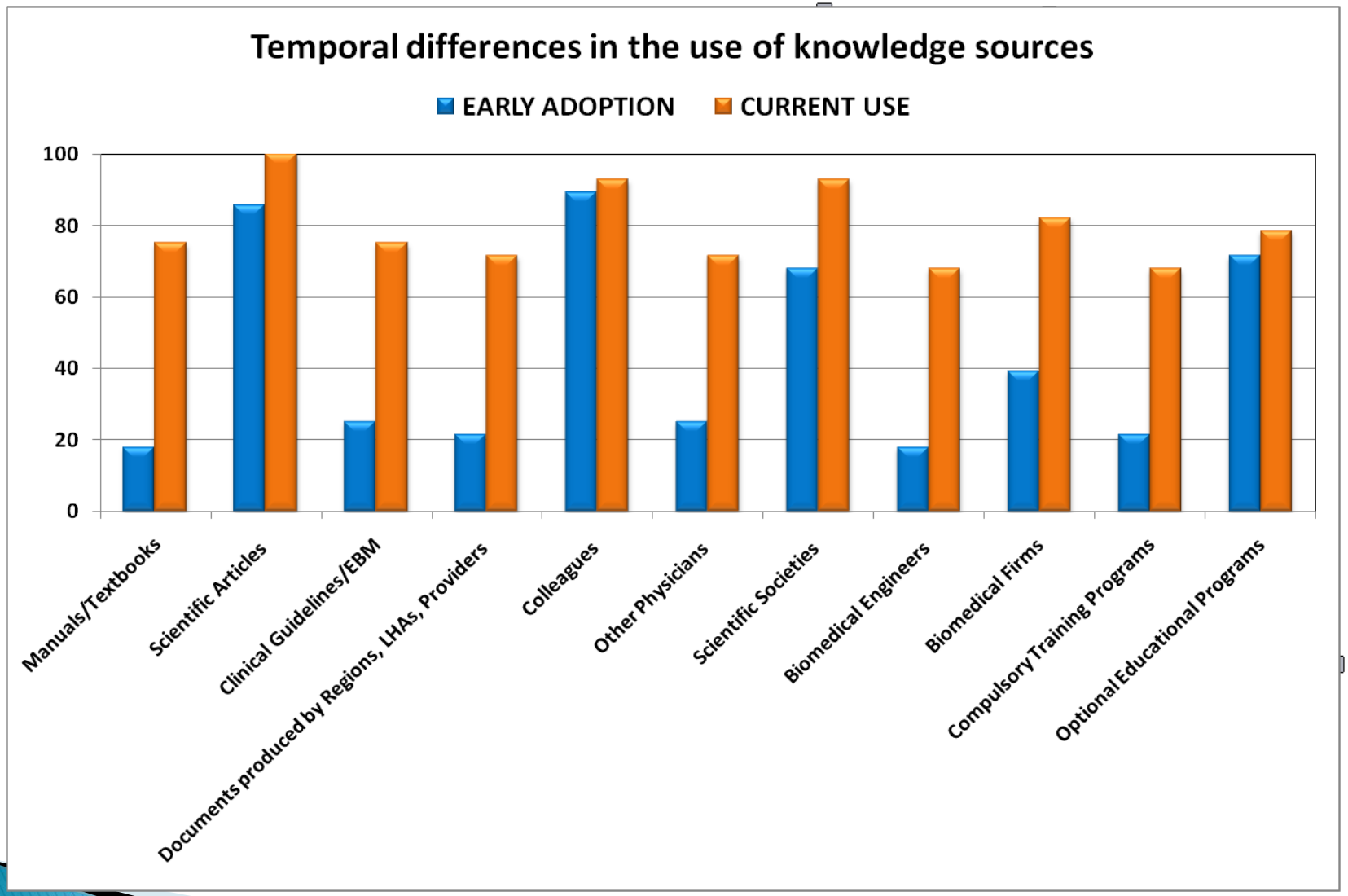


Results (2/3)


No. OF USERS PER YEAR
5
4
3
2
1
0
1998
2001
2002
2004
2005
2006
2007
2008
2009
2010


SPECIALTIES OF SURGEONS INTERVIEWED
GENERAL SURGERY
THORACIC SURGERY
CARDIAC SURGERY
OBSTETRICS AND GYNAECOLOGY
OTOLARYNGOLOGY
UROLOGY
21,1%
11,1%
3,6%
7,2%
3,6%
53,4%

Results (3/3)


Temporal differences in the use of knowledge sources
EARLY ADOPTION
CURRENT USE
100
80
60
40
20
0
Manuals/Textbooks
Scientific Articles
Clinical Guidelines/EBM
Documents produced by Regions, LHAs, Providers
Colleagues
Other Physicians
Scientific Societies
Biomedical Engineers
Biomedical Firms
Compulsory Training Programs
Optional Educational Programs

Implications

- Integration and knowledge exchange should enhance the diffusion of innovation within healthcare organizations
- Being part of the same social structure should encourage the adoption of a new technology
- Policy makers and hospital administrators are more likely to identify **opinion leaders** who can
  - encourage the diffusion of certain technologies
  - hinder the adoption of those innovations whose effectiveness still appears questionable

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