

Panos Markopoulos [University of Cyprus]

MCIS 2011

Panel on Contemporary Issues in Economics of IS

Paul A. Pavlou, Kartik Hosanagar, Panos Markopoulos

Motivating Discussion

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CONTENTS

- **Introduction – Scope of Presentation**
- IS Economics Communities
- Overview of Topics and Methodologies
- Popular Topics
- Popular Methodologies

PRESENTATION GOALS

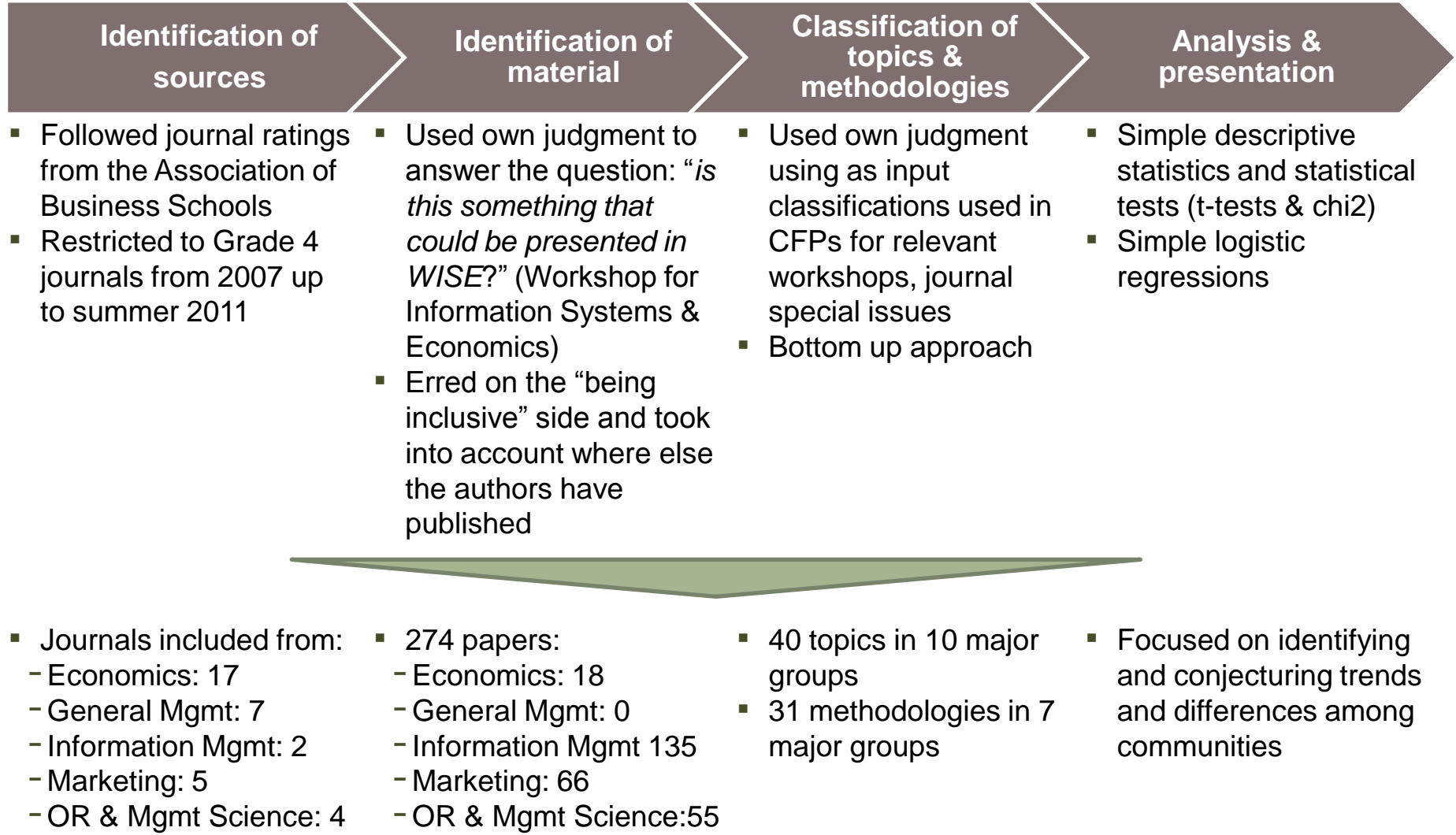
**Underscore the
Interdisciplinary
nature of the field**

**Review the fast pace
of change**

Motivating factor

- IS Economics work is being done in communities ranging from Operations Research to Neuropsychology
- Only natural for single-community-dominated conferences, journals and career paths to produce silos of knowledge
- Obstacles for common understanding not so much access to each other's work, but often motivation, vocabulary and methodology
- Obvious need for communities to be more aware of each other's work
- Fast pace of change driven by market and technology forces
- Topics within the field gain much attention in the popular press and attract an increasing audience

METHODOLOGY



OVERVIEW OF FINDINGS

Main findings:

- More than 50% of articles on IS Economics published outside of the IS community
- Increased interest in the field in the last two years (according to publication count)
- Most commonly employed methodology is the empirical analysis of data, although the relative frequency of empirical articles is reducing due to a shift in popular topics
- Most common topic groups include 'Marketing, Recommendations & Consumer Behavior' and 'Market Structure, Efficiency and Firm Competitive Strategy'.
- Fastest growing topic group is 'IS Technology, Adoption and Standards'

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IS ECONOMICS IN DIFFERENT COMMUNITIES THROUGH TIME

ABS Grade 4 Journals Publications

	Years					
Communities	2007	2008	2009	2010	2011*	Totals
Econ	5		5	5	6	21
IS	20	20	23	46	52	161
Mgmt/OR	10	11	12	14	16	63
Mkt	8	14	10	22	24	78
Totals	43	45	50	87	98	323

Observations

- more than 50% of articles on IS Economics published outside of the IS community
- Increasing interest in the field in 2010 and 2011 driven mainly by the IS and Marketing communities
- 2011 looks set to be a record publication year for the field

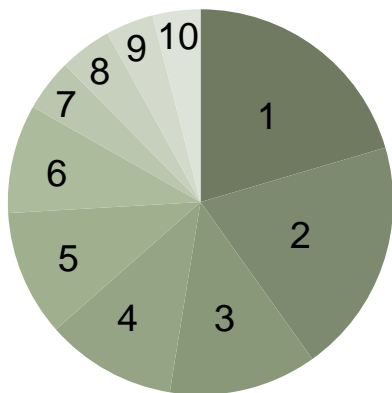
* Projected

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MAJOR TOPIC GROUPS IN IS ECONOMICS THROUGH TIME

ABS Grade 4 Journals Publications



Topic Groupings	2007	2008	2009	2010	2011YTD	Totals	
1 Marketing, Recommendations & consumer behavior	6	11	11	17	11	56	20%
2 Market Structure, efficiency and firm competitive strategy	8	7	11	18	10	54	20%
3 IS Technology, adoption and standards	3	7	3	12	9	34	12%
4 Privacy, Security, Filesharing	5	8	5	7	5	30	11%
5 Auctions	4	6	8	7	4	29	11%
6 Productivity & Economic impact	7	3	4	8	3	25	9%
7 Outsourcing	2	2	4	4		12	4%
8 IS Strategy & Governance	3			7	2	12	4%
9 Policy & Society	2		1	4	4	11	4%
10 B2B	3	1	3	3	1	11	4%
Totals	43	45	50	87	49	274	100%

Observations

- Top 3 topic groups are:
 - Marketing, Recommendations & Consumer Behavior (20%)
 - Market Structure, Efficiency and Firm Competitive Strategy (20%)
 - IS Technology, adoption and standards (12%)
- The topic groups of Productivity and Economic impact and B2B do not appear to follow the trend of increased article production
- Increasing interest in IS Technology, Adoption and Standards and in Marketing, Recommendations & Consumer Behavior relative to 2007

DIFFERENCES IN TOPIC GROUPS WITHIN COMMUNITIES

ABS Grade 4 Journals Publications %

Topic Groupings	Communities				Totals %
	Econ	IS	Mgmt/OR	Mkt	
Marketing, Recommendations & consumer behavior	17%	16%	13%	38%	20%
Market Structure, efficiency and firm competitive strategy	28%	15%	25%	23%	20%
IS Technology, adoption and standards	0%	15%	16%	8%	12%
Privacy, Security, Filesharing	11%	10%	15%	9%	11%
Auctions	22%	6%	15%	14%	11%
Productivity & Economic impact	11%	11%	9%	5%	9%
Outsourcing		8%	2%		4%
IS Strategy & Governance	6%	8%			4%
Policy & Society	6%	5%	2%	3%	4%
B2B		6%	4%	2%	4%
Number of papers	18	135	55	66	274

% percent of papers within community

■ Top 3 topic groups within community

Observations

- Market Structure, Efficiency and Firm Competitive Strategy is among the top 3 topic groups in all communities
- The IS Technology, Adoption and Standards topic group (with an increasing publication trend) receives relatively little attention in the Marketing and no attention in the Econ communities

NUMBER OF DISTINCT METHODOLOGIES USED PER ARTICLE

ABS Grade 4 Journals Publications

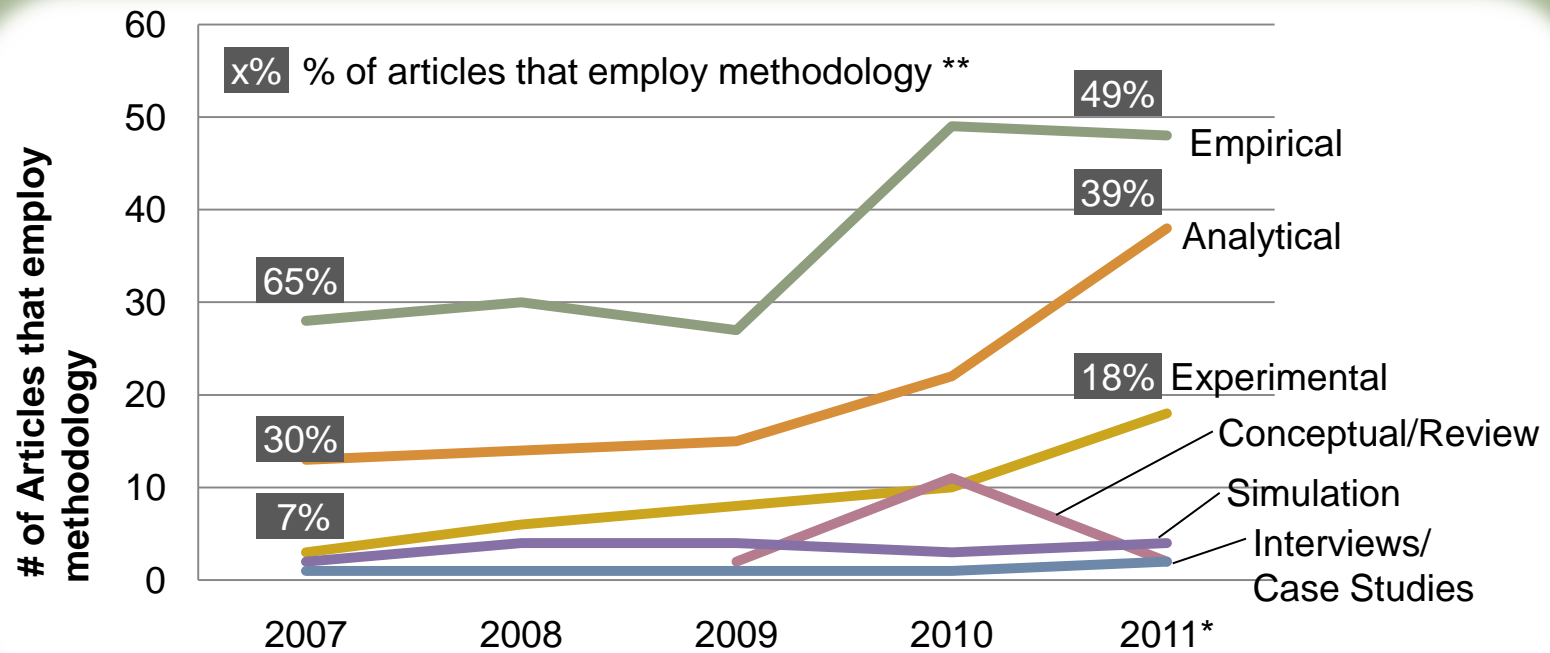
Communities	Articles with multiple methodologies	Articles with single methodology	Total	
IS	14	121	135	10%
Mkt	13	53	66	20%
Mgmt/OR	10	45	55	18%
Econ	2	16	18	11%
Total	39	235	274	14%

Observations

- 14% of articles use single methodology
- 20% of the articles from the marketing community use more than one methodology, compared to 10% of the articles from the IS community. However, differences among communities are not statistically significant at the 5% level
- However, the following is statistically significant ($p=0.001$): if the first methodology encountered in the paper is empirical, it is more likely that there is no other methodology in use

METHODOLOGY GROUPS IN IS ECONOMICS THROUGH TIME

Methodologies in ABS Grade 4 Journals Publications



Observations

- 49% of methodologies used in 2011 are in the Empirical group, compared with 65% in 2007
- However, the time trend in the mix % of methodology groups is not statistically significant. Changes appear to be caused by changes in topics

* Projected

** Percentages sum up to more than 100% as some articles employ more than one methodology



PREVALENCE OF DIFFERENT METHODOLOGIES WITHIN TOPIC GROUPS

ABS Grade 4 Journals Methodologies %

Topic Groupings	Empirical	Analytical	Experiment	All other	# of papers
Marketing, Recommendations & consumer behavior	64%	23%	20%	13%	56
Market Structure, efficiency and firm competitive strategy	44%	48%	11%	15%	54
IS Technology, adoption and standards	50%	35%	12%	15%	34
Auctions	30%	53%	33%	10%	30
Privacy, Security, Filesharing	55%	38%	7%	14%	29
Productivity & Economic impact	76%		12%	12%	25
Policy & Society	83%	25%		8%	12
Outsourcing	83%	8%		8%	12
IS Strategy & Governance	73%			36%	11
B2B	82%	9%		18%	11
Totals %	58%	30%	13%	5%	274

% percent of papers that employ given methodology

■ Top methodology within topic group

*

Observations

- Empirical methodologies are the most common methodology in all areas except Market Structure, Efficiency and Firm Competitive Strategy and in Auctions
- Experimental methodologies only exceed 25% in Auctions
- The relative decrease of empirical methodologies and relative increase of experiments is explained by relative changes in topics ($p < 0.01$). Especially the relative decrease in papers on Productivity and Economic Impact and B2B and by the relative increase in articles in IS Technology, Adoption and Standards relative to 2007

* Percentages sum up to more than 100% as some articles employ more than one methodology

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MARKETING, RECOMMENDATIONS & CONSUMER BEHAVIOR

Popular Topics:

Recommendations, WOM, Feedback & Consumer Reviews

21

- The economics and economic impact of using experts' and other consumers' opinions on products and services, as well as contributing to the information that is available online for the product or service

(Xinxin&Hitt '08) Self-Selection and Information Role of Online Product Reviews

Advertising

13

- The economics of online advertising and especially (12 out of 13) advertising through sponsored search results

(Yang&Ghose '10) Analyzing the Relationship Between Organic & Sponsored Search Advertising

Online Consumer Behavior

11

- Economic aspects of online consume behavior in a variety of contexts, ranging from consumer trust, to the impact of website design and collaborative shopping

(Pavlou,Huigang,Yajiong'07) Understanding And Mitigating Uncertainty In Online Exchange Relationships

Internet Marketing

11

- Exploration of the design and impact of relevant mechanisms, from website customization and viral marketing, to electronic coupons and commercial chat

(Dou et al '10) Brand Positioning Strategy Using Search Engine Marketing



MARKET STRUCTURE, EFFICIENCY AND FIRM COMPETITIVE STRATEGY

Popular Topics:

Optimal Vendor Strategy

32

- Optimal competitive response (e.g., pricing, bundling, obfuscation, deployment of customer service) in a wide variety of contexts, ranging from the response to off-line channels to content delivery network services

Representative Example

(Hosanagar et al. '08)
Service Adoption & Pricing of Content Delivery Network Services

Market Structure/ Efficiency

12

- Focus on the overall operation of electronic markets, rather than the competitive response of any one firm in it. Interests include price dispersion and product variety, among others

(Brynjolfsson et al. '10)
Long Tails vs. Superstars: The Effect of IT on Product Variety and Sales Concentration Patterns

IS-Related Markets

6

- A closer look at the markets of Application Service Providers, Enterprise Systems Software and Mobile Communications

(Chellappa et al. '10)
Competing in Crowded Markets: Multimarket Contact and the Nature of Competition in the Enterprise Systems Software Industry"

Other

4

- Optimal competitive strategy of intermediaries and exploration of different online revenue models

▪ N/A



IS TECHNOLOGY, ADOPTION & STANDARDS

Popular Topics:

Technology Adoption

of
papers

8

Description

- The process and economic impact of technology adoption in different sectors (such as banking and healthcare) and for different technologies (such as electronic payments and network technologies)

Representative Example

(Agarwal et al '10) The Digital Transformation of Healthcare: Current Status and the Road Ahead

Software Development

7

- The economics of Software Development, with topics such as outsourcing and open source software

(Jayanth et al '11) Vendor & Client Interaction for Requirements Assessment in Software Development

E-Commerce tech: Recommendations, Search & Product Info

6

- The technology of recommendations, product search and supporting services, as well as product presentation technologies

(Bo & Benbasat '07) eCommerce Product Recommendation Agents: Use, Characteristics, Impact

Other

14

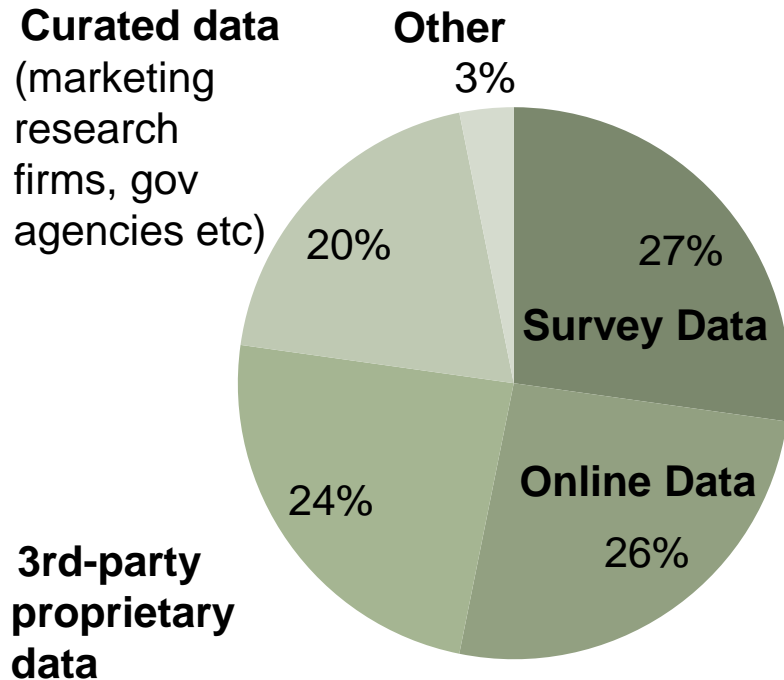
- A wide variety of topics, ranging from the economics of distributed services, to intelligent agents, market based methods, personalization and self-service technologies etc.

- N/A

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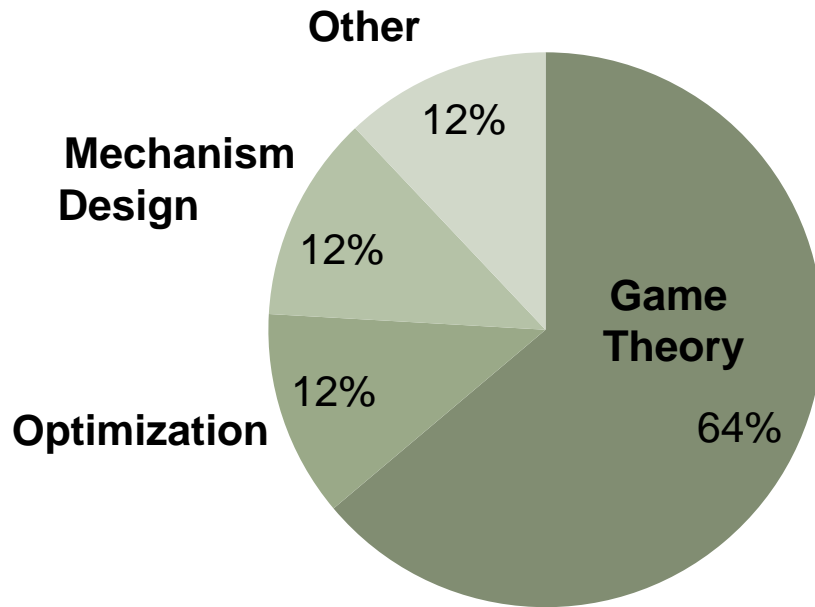
BREAKDOWN OF EMPIRICAL METHODOLOGIES BASED ON THE SOURCE OF THE DATA



Observations

- Empirical methodologies about equally divided between the four major data sources observed, with more researchers on average opting to assemble their own data sets, rather than rely on curated or proprietary data
- It was common for the main data source to be supplemented by additional sources
- The 3rd-party proprietary data came from a variety of institutions ranging from banks to online-dating sites. Most of the sources had requested to remain anonymous

BREAKDOWN OF ANALYTICAL METHODOLOGIES BASED ON THE MATHEMATICAL TECHNIQUE EMPLOYED



Observations

- More than two out of three analytical methodologies employ Game Theory with Optimization and Mechanism Design being distant seconds
- Other methodologies observed where the use of Graph Theory, Diffusion Models, development of Econometric techniques etc
- The majority of the papers that employ Mechanism Design as their primary analytical technique also employ a secondary methodology, e.g., Simulation (compared to one in seven for Game Theory articles)

ALSO INTERESTING IS...

- No differences in the average number of authors across time, topic groups and communities (avg: 2.7)
 - ...but game theoretical papers tend to be written by fewer (avg:2.4) authors ($p<0.01$)
 - ... and lab experiments by more (avg: 3.3) ($p<0.01$)
- Articles that employ more than one methodology do not use more authors. It appears that researchers collaborate to contribute ideas and not methodologies
- No articles on Cloud Computing and “Big Data” and fewer than expected articles on social networks (5 articles since 2007), categorized under policy & society
- Impact of field leaders in shaping the research agenda: special issues significantly influence topic mix