



IS and service Research: A Co-citation Analysis

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Purposes

- Explore and review IS and Service research domain to better understand its:
 - origins
 - current state of development
 - future trends

“Scholars devote significant effort to make sense of what has already been done, capture key lessons learned from the past, and identify directions for the future.”
(Zahra and Sharma, 2004, p. 332)

Why we've done that?

- Because:
 - E-service have gained increasing interest
 - IS & IT have changed the way service firms and their customers interact
 - Objective vs. subjective literature review

Methodology

- Our study is based on **bibliometrics**: “the study of a given field or body of literature using quantitative analysis and statistics to describe patterns of publication” (Gartner, *et al.*, 2006)
- **Citation analysis** (one of the main techniques adopted in bibliometrics) is based on the premise that authors cite papers they consider to be important to the development of their research. As a result, heavily cited articles are likely to have exerted a greater influence on the subject than those less frequently cited (Culnan, 1986; Sharplin and Mabry, 1985).

Methodology

- **Co-citation analysis** is based on grouping together publications that are frequently cited in pairs. The underlying assumption being that two often co-cited documents are related to one another, and address the same broad research questions, without necessarily agreeing with each other (White and Griffith, 1981)

Co-citation (an example)

Information system and service research: a co-citation analysis

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Abstract. In this paper, we focus on those contributions to the Information System and service literature recognized as being the most influential, and use co-citation analysis to trace the linkages among them, search for broad research fronts or subfields, and determine the relationships, if any, among the subfields.

Introduction

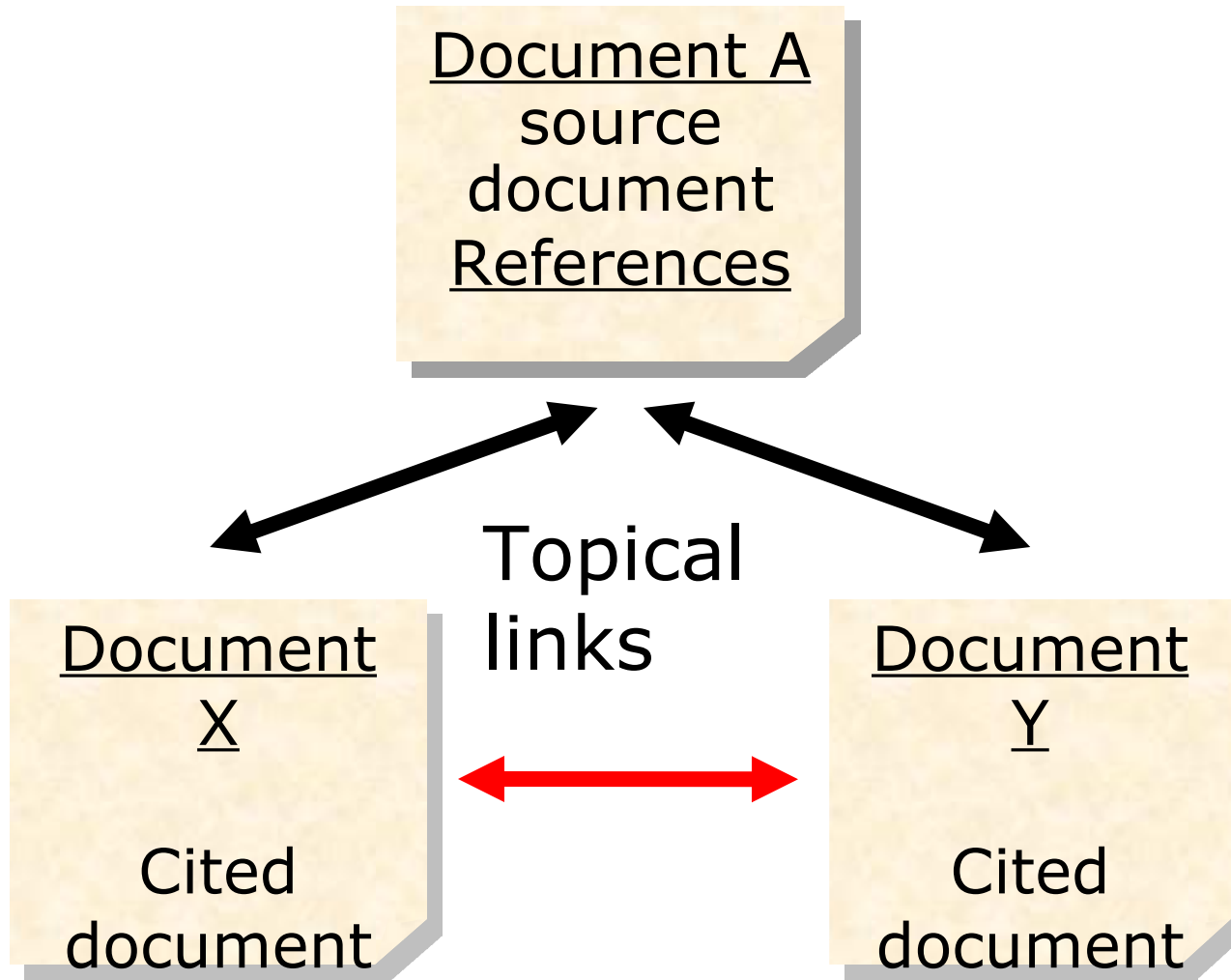
The impact of Information Technologies (IT) on service and service quality has rapidly grown since firms worldwide embraced emerging technologies to restructure archaic bureaucratic procedures [1]. The increasing availability of IT has provided an opportunity for the diffusion of e-services and many private and public organizations currently employ or are planning to implement electronic service



References

1. Moon, M.J. (2002) The evolution of e-government among municipalities: rhetoric or reality? *Public Administration Review* 62(4): 424-433.
2. Santos, J. (2003) E-service quality – a model of virtual service dimensions, *Managing Service Quality* 13(3): 233-247.

Topical links





Co-citation analysis through 6 steps

1. Selecting the unit of analysis
2. Retrieving co-citation frequencies
3. Compiling the raw co-citation matrix
4. Converting the raw co-citation matrix into a correlation matrix
5. Multivariate analysis
6. Interpreting the findings

Co-citation Analysis

- We based the analysis on the Social Science Citation Index (SSCI) of Thompson-ISI with a time span from 1990 to 2009.
- The database covers over 1,700 world's leading scholarly social sciences journals (the analysis was performed in May 2009).
- The criterion adopted crossed two subsets of key words:
 1. Information System(s); Information Technology; IS; IT
 2. Service(s); e-service(s); eservice(S)

Co-citation Analysis

We obtained a set of 3100 contributions.

Given the interest in defining the core of the discipline,

- we selected **only articles** published on journals in the fields of business, management, finance, information systems and economics;
- **only articles** with more than 50 citations, if published between 1990 and 2005, and more than 10 citations if published after the 2006.

Co-citation Analysis

- The selection process resulted in a total of **34 articles**.
- Each of those was paired with every other paper and the co-citation frequency of each pair was computed. The result was a 34 by 34 matrix of co-citation counts.



The set of articles

Goodhue & Thompson, *MISQ*, JUN, 1995 (P1)

DeLone, WH; McLean, ER, *JMIS*, SPR, 2003 (P2)

Bhattacharjee, *MISQ*, SEP, 2001 (P3)

Pitt, Watson & Kavan, *MISQ*, JUN, 1995 (P4)

Lee, *MISQ*, JUN, 1994 (P5)

Kettinger & Lee, *DS*, 1994 (P6)

Lacity & Willcocks, *MISQ*, 1998 (P7)

Feeny & Willcocks, *SLOAN MR*, 1998 (P8)

Liu & Arnett, *I&M*, 2000 (P9)

Straub, *ISR*, Mar, 1994 (P10)

Pavlou & Gefen, *ISR*, MAR, 2004 (P11)

Lacity & Hirschheim, *SLOAN MR*, FAL, 1993 (P12)

Dewan & Min, *MS*, DEC, 1997 (P13)

Chatterjee, Grewal & Sambamurthy, *MISQ*, JUN, 2002 (P14)

VanDyke, Kappelman & Prybutok, *MISQ*, JUN, 1997 (P15)

Lacity, Willcocks & Feeny, *HBR*, MAY-JUN, 1995 (P16)

Chan, Huff, Barclay & Copeland, *ISR*, JUN, 1997 (P17)

Boudreau, Gefen & Straub, *MISQ*, MAR, 2001 (P18)

Chan & Hu, *I&M*, JAN, 2002 (P19)

Benaroch & Kauffman, *ISR*, MAR, 1999 (P20)

Choudhury, Hartzel & Konsynski, *MISQ*, DEC, 1998 (P21)

Broadbent, Weill & St Clair, *MISQ*, JUN, 1999 (P22)

Mukhopadhyay, Rajiv & Srinivasan, *MS*, DEC, 1997 (P23)

Kettinger, Teng & Guha, *MISQ*, MAR, 1997 (P24)

Bhattacharjee & Premkumar, *MISQ*, JUN, 2004 (P25)

Kettinger & Lee, *MISQ*, JUN, 1997 (P26)

Straub & Watson, *ISR*, DEC, 2001 (P27)

Dewan & Kraemer, *MS*, APR, 2000 (P28)

Devaraj & Kohli, *JMIS*, SPR, 2000 (P29)

Venkatraman & Henderson, *SLOAN MR*, FAL, 1998 (P30)

Benaroch & Kauffman, *MISQ*, JUN, 2000 (P31)

Saarienen, *I&M*, NOV, 1996 (P32)

Martinsons & Westwood, *I&M*, OCT, 1997 (P33)

Lyytinen & Yoo, *ISR*, DEC, 2002 (P34)

Sample co-citation matrix (extract)

	P1	P2	P3	P4	P5	P6	P7	P8	P9
P1	0	33	11	12	5	10	0	0	6
P2	33	0	28	31	0	17	0	3	10
P3	11	28	0	17	0	10	0	0	4
P4	12	31	17	0	0	52	1	3	15
P5	5	0	0	0	0	0	0	0	0
P6	10	17	10	52	0	0	2	0	13
P7	0	0	0	1	0	2	0	9	0
P8	0	3	0	3	0	0	9	0	1
P9	6	10	4	15	0	13	0	1	0
P10	6	2	4	1	5	0	0	2	0
P11	3	5	4	3	0	1	1	0	1
P12	0	0	0	3	0	1	20	7	0
P13	3	2	0	0	0	0	0	2	0
P14	3	8	3	2	0	1	1	4	1
P15	6	10	6	38	0	28	1	0	8

Sample correlation matrix (extract)

In order to standardize the data and avoid possible scale effects, as well as reducing the number of zeros in the matrix, the Pearson correlation matrix was estimated.

1	,210	,518	,518	-,031	,454	-,216	-,084	,622	,080	,535	-,192
,210	1	,384	,355	,280	,605	-,161	-,277	,644	,320	,448	-,127
,518	,384	1	,407	,087	,478	-,173	-,119	,563	,103	,641	-,136
,518	,355	,407	1	-,053	,374	-,058	-,262	,675	-,021	,405	-,094
-,031	,280	,087	-,053	1	-,056	-,135	-,141	-,002	,248	,220	-,132
,454	,605	,478	,374	-,056	1	-,095	-,063	,743	,017	,448	-,002
-,216	-,161	-,173	-,058	-,135	-,095	1	,338	-,102	-,136	-,206	,315
-,084	-,277	-,119	-,262	-,141	-,063	,338	1	-,169	-,146	-,230	,448
,622	,644	,563	,675	-,002	,743	-,102	-,169	1	,059	,465	-,065
,080	,320	,103	-,021	,248	,017	-,136	-,146	,059	1	,213	-,138
,535	,448	,641	,405	,220	,448	-,206	-,230	,465	,213	1	-,077
-,192	-,127	-,136	-,094	-,132	-,002	,315	,448	-,065	-,138	-,077	1
-,095	-,146	-,118	-,163	-,044	-,148	-,127	,048	-,142	-,138	-,130	-,145
,512	,076	,326	,197	-,025	,170	-,158	,089	,280	,224	,263	-,112
,478	,644	,481	,397	-,039	,642	-,049	-,024	,831	,019	,307	-,005
-,209	-,190	-,169	-,093	-,104	-,092	,658	,652	-,152	-,134	-,129	,392
,338	,302	,198	,062	,116	,196	-,052	,141	,261	,217	,219	,018
,333	,515	,421	,266	,259	,436	-,235	-,091	,407	,330	,301	-,211
,517	,456	,570	,266	,413	,151	-,135	-,233	,248	,517	,595	-,144
-,155	-,136	-,131	-,123	-,066	-,110	-,095	-,134	-,130	-,113	-,141	-,089
,153	,009	,043	,056	-,113	,026	,056	,181	-,122	-,096	-,020	,051

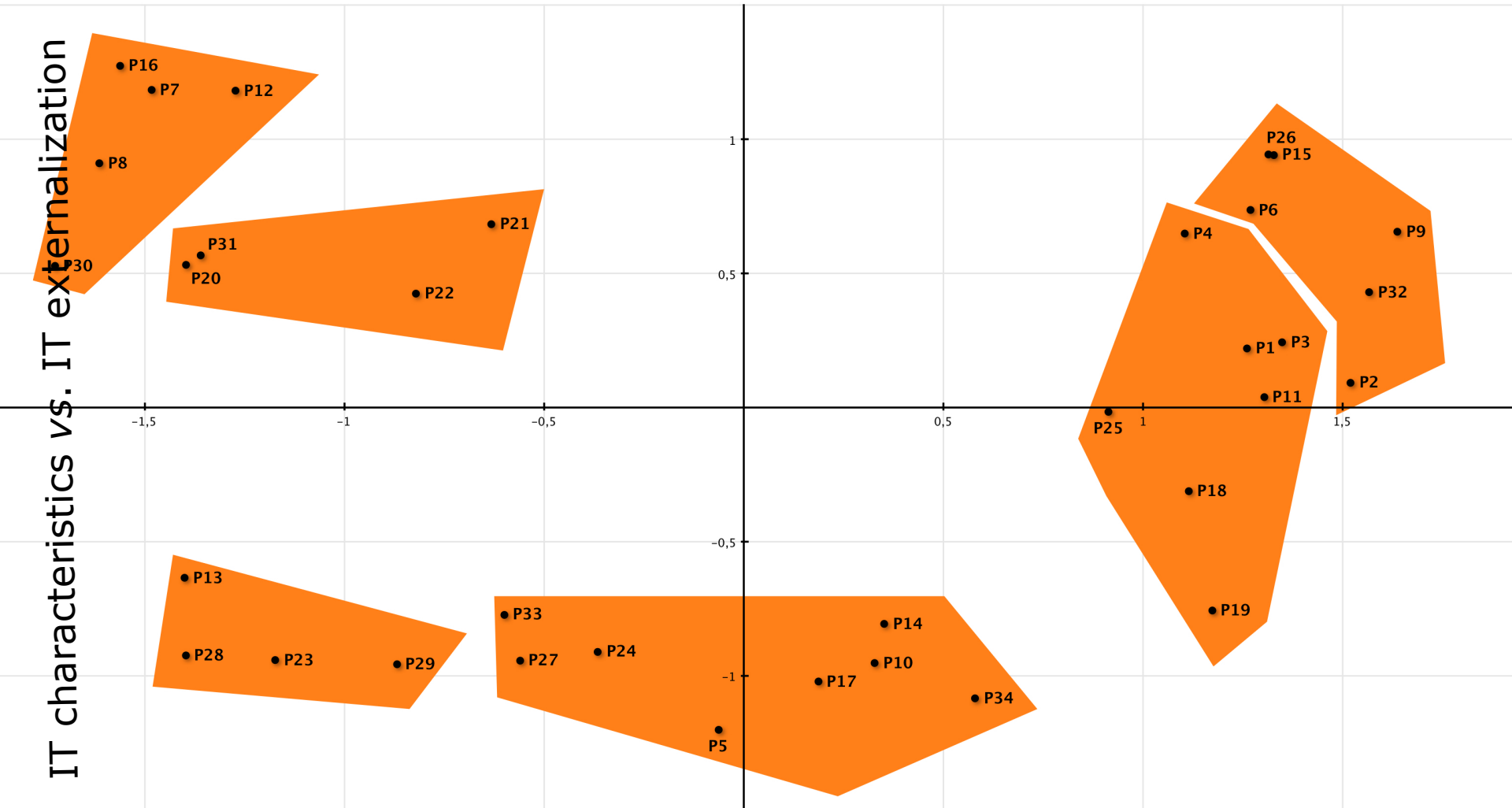
Co-citation Analysis

- We applied three multivariate statistical techniques to the correlation matrix. First of all, non-metric Multidimensional Scaling (MDS) was employed, allowing us to generate a map in order to observe the relationship between the authors. Second, we applied a cluster analysis, which lets us obtain a series of groups of significant authors. Finally, a Factor Analysis was used to identify which authors make up each factor and their degree of contribution or loading as an approximation of the relative influence that each of them has within the stream of research.

MDS and Cluster Analysis

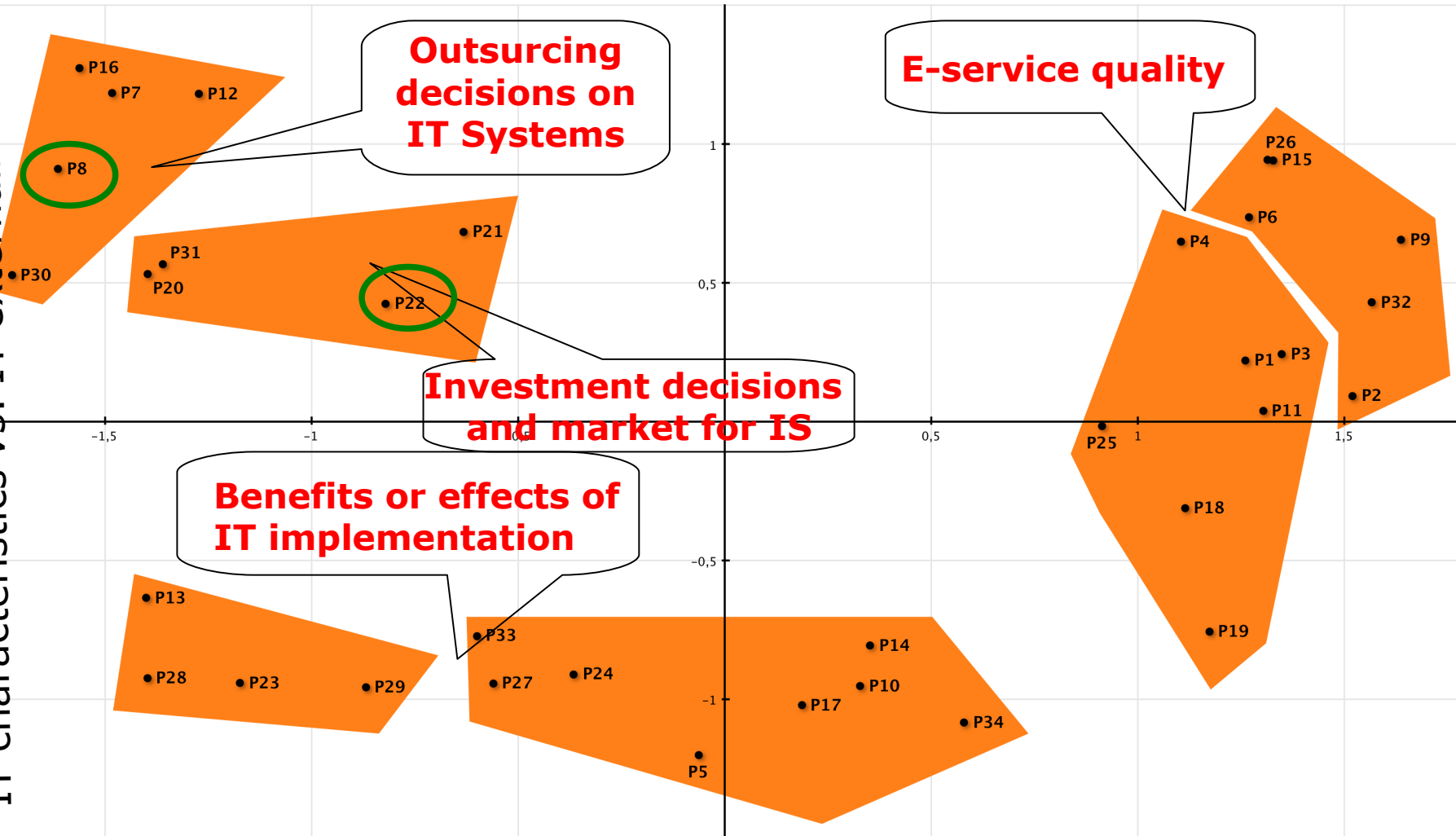
IT characteristics vs. IT externalization

Perception of service related to IS implementation (e-service quality)



MDS and Cluster Analysis

IT characteristics vs. IT externalization




Perception of service related to IS implementation (e-service quality)

	1	2	3	4
P32	,968			
P9	,968			
P6	,939			
P1	,923			
P3	,921			
P26	,911			
P4	,909			
P15	,907			
P2	,859			
P11	,830			
P18	,742	,504		
P25	,732			
P30	-,674			,618
P16	-,535			
P7	-,510			
P34		,870		
P5		,833		
P10		,786		
P19	,592	,732		
P24		,705		
P33		,646		
P27		,626		
P21				
P29			,919	
P28			,875	
P23			,870	
P13			,786	
P17		,518	,624	
P14			,550	
P22				,632
P8	-,546			,584
P31				-,551
P20				-,513
P12				

Conclusions

1. Literature on IS and e-service seems to be polarized between individual level (customer interaction) and firm level (implementation's effects) and between a strategic management point of view and a more technical point of view (related to technological effectiveness of IS or IT systems)
2. No central articles (so-called seminal paper)
3. No so defined and structured as field of research (young)
4. Multidisciplinary field



Thank you for
your attention

Any question

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