



**HAL**  
open science

## Applying and theorizing institutional frameworks in IS research: a systematic comparison from 1999 to 2009

François-Xavier de Vaujany, Sabine Carton, Nathalie Mitev, Cécile Romeyer

### ► To cite this version:

François-Xavier de Vaujany, Sabine Carton, Nathalie Mitev, Cécile Romeyer. Applying and theorizing institutional frameworks in IS research: a systematic comparison from 1999 to 2009. *Information Technology and People*, 2014, 27 (3), pp.280-317. 10.1108/ITP-10-2013-0185 . hal-01648098

**HAL Id: hal-01648098**

**<https://hal.science/hal-01648098v1>**

Submitted on 24 Nov 2017

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# **APPLYING AND THEORIZING INSTITUTIONAL FRAMEWORKS IN IS RESEARCH: A SYSTEMATIC ANALYSIS FROM 1999 TO 2009**

François-Xavier DE VAUJANY  
DRM-Université Paris-Dauphine  
[devaujany@dauphine.fr](mailto:devaujany@dauphine.fr)

Nathalie MITEV  
Management department (ISIG)  
London School of Economics  
[n.n.mitev@lse.ac.uk](mailto:n.n.mitev@lse.ac.uk)

Sabine CARTON  
IAE de Grenoble and CERAG  
[Sabine.carton@iae-grenoble.fr](mailto:Sabine.carton@iae-grenoble.fr)

Cecile Romeyer  
Coactis  
Université Jean Monnet  
[Cecile.romeyer@univ-st-etienne.fr](mailto:Cecile.romeyer@univ-st-etienne.fr)

## **Abstract**

*This article investigates how Information Systems researchers apply institutional theoretical frameworks. Our aim is to explore the operationalization of meta-theoretical frameworks for empirical research which can often present difficulties in IS research. We include theoretical, methodological and empirical aspects to explore modalities of use. After an overview of institutional concepts, we carry out a thematic analysis of empirical journal papers on IS and institutional theory indexed in databases from 1999 to 2009. This consists of descriptive, thematic coding and cluster analysis of this textual database; this combined qualitative and quantitative method offers a unique way of analyzing how operationalization is carried out. On the basis of thematic coding and cluster analysis, our findings suggest three groups of publications which represent different methodological approaches and empirical foci: 'descriptive exploratory approaches', 'generalizing approaches', and 'sociological approaches'. We suggest that these three groups represent possible patterns of the use of 'meta' social theories in IS research, reflecting a search for disciplinary legitimacy. This helps us analyze papers according to how they use and apply theories. We identify the "organizing vision" and the regulatory approach as two institutionalist 'intermediary' concepts developed by IS researchers. Furthermore, we find that institutional theoretical frameworks have been used in 'direct', 'intermediary' or 'combined' conceptualizations. We also confirm the dynamism of the IS institutional research stream, as evidenced by the increase in number of articles between 1999 and 2009, and identify a maturation process of the IS field in investigating a social theory. As a conclusion, we make suggestions to blend different conceptualizations, methodologies and empirical foci to enrich the use of institutionalist theories in IS empirical research.*

**Keywords:** Institutional theory, Literature review, Longitudinal data, IS Journals

## **1. Introduction: Using meta-theories**

Over the last two decades, an increasing number of IS (Information Systems) researchers have drawn on 'grand' (or 'meta') social theories to make sense of IS -related social dynamics (Flynn and Gregory, 2004; Jones, 1999, 2003; Klecun, 2004; Monod, 2004; Jones and Karsten 2008). Indeed, as stated by Jones (2000: 123) for the IFIP Working Group 8.2 (Organizational and Societal Issues of Information Systems) "an appreciation that the social context of the development and use of information technologies is essential to an understanding of information systems". Nonetheless, many seminal writings from social theories imported by IS scholars, do not deal explicitly with their potential use, i.e. the way they can be 'applied' to organizational settings through specific research techniques and 'intermediary' concepts/theories.

In this paper, our aim is to investigate the mechanisms by which IS researchers have applied institutional and neo-institutional theoretical frameworks over a period of eleven years; in order to identify possible patterns, we examine the operationalization of these frameworks, i.e. which theoretical intermediary concepts IS researchers used and how they designed their research. Institutional frameworks have been used fairly recently and quite extensively in IS research and therefore provide an interesting example of the use of meta-social theories in IS research. Most seminal institutional writings (by Commons, Veblen, DiMaggio, Powell, Scott...) are extremely theoretical with rare empirical examples. As a result, the general question we will address is: How do IS researchers use institutional theoretical frameworks to carry out their empirical work? We describe and analyze existing patterns in the case of institutional research and suggest further potential possibilities. The aim of our literature review is unusual in that we want to identify the use and development of specific theoretical concepts, as well as the research process implemented to apply these concepts (methodological approach, data collection and analysis).

Institutional research about IT addresses a broad range of information technologies and focuses on the usual topics of interest found in the IT literature: innovation, adoption, implementation and assimilation (Mignerat and Rivard, 2005, 2009). This research generally falls under one of three broad themes (Mignerat and Rivard 2009): the impact of institutional pressure on the diffusion of IT innovations, the institutionalization process of software applications and the interaction between the IT artefact and existing institutions.

To our knowledge, two substantial reviews of IS research based on institutional theory have been previously conducted (Mignerat and Rivard, 2009; Weerakkody et al., 2009). These reviews identify the growing interest for

institutional theory in the IS field, the organizational level as the main unit of analysis, and quantitative research as the main research methodology mobilized. These two reviews do not focus on papers where institutional theoretical frameworks are combined with other theoretical frameworks, which we do in our literature review. Nor do they highlight how researchers applied the theories, which is the specific focus of our paper as we are interested in the theorization process itself. The main characteristic of our paper is its methodological approach which supports a deep analysis of this process in a specific body of literature. Another outcome is that we also provide a detailed analysis of the domain of institutional frameworks in IS research, covering a number of issues through the identification of categories and the proposition of a taxonomy.

The first part of the paper introduces general institutional and neo-institutional theoretical frameworks. Its purpose is to provide sufficient detail to support the understanding and identification of uses of institutional theory in the IS research literature. Next we explain our research method based on thematic and factorial analyses of all the articles (for the period 1999-2009) indexed by ABI and EBSCO which have carried out some form of institutional analysis of IS. We then present our findings and analyze our results, showing conformity in methodological, theoretical and empirical terms. We identify an evolution in applying institutional theoretical frameworks. We also provide an innovative methodology by means of which categories and levels of institutional theoretical frameworks could be identified and described. We attempt to identify patterns, discuss possible institutional reasons for their existence and legitimacy, and we suggest further avenues of exploration in future IS research, such as combining different theoretical lenses in institutional frameworks.

## 2. Main institutional and neo-institutional theoretical frameworks: an overview

As institutional theory is characterized by epistemological pluralism and conceptual ambiguity (Currie and Swanson 2009; Currie 2009), it is vital to understand key notions such as “institution”, or more generally “seminal institutional research”. This will help understand the difficulties encountered in applying these theoretical frameworks to a field such as IS.

### 2.1. Sources of institutional and neo-institutional frameworks: what is an institution?

An institution implies both a system of social rules and a framework making it possible to locate and compare objects and people. Following a more normative stance, Scott (2001) defines an institution as a ‘social structure’ which gives organizations and individuals lines of action and orientations by controlling and constraining them. Emphasizing the constraining powers of institutions, Barley and Tolbert (1997: 94) state that an institution “represent(s) constraints on the options that individuals and collectives are likely to exercise, albeit constraints that are open to modification over time”.

Beyond these definitions, we will see in the next section the plurality of institutionalist stances, all emphasizing the presence and solidity of institutions in social life, but relying on different interpretations of rules, social structures, social orders, legitimacy and agency.

### 2.2. Institutionalism: seminal frameworks

Institutions, the specific social structures examined by institutionalism, have been the subject of numerous analyses from diverse points of view including economics, sociology and organization theory. Table 1 provides an overview.

	<b>Indicators</b>	<b>Levels</b>	<b>Social Order</b>	<b>Legitimacy</b>	<b>Agency</b>
<b>Early Institutionalism</b> Main proponents:					
<i>Commons</i>	“Operating rules” Laws	Institution World system / societal	Economic activity	Natural rights	Transaction
<i>Veblen</i>	Habits of thought	Institution World system / societal	Meaning	Values	Inspiration
Parsons	Systems of norms	Behavior, personality – micro	Cultural values	Cultural patterns	Convergence

		foundations			
<b>Transaction Cost Economics (Neo-institutionalist economics)</b> <i>Coase</i> <i>Williamson</i>	Formal rules	Firm / Organization	Economic activity Regulative rules	Cost of market use vs. organization Legally sanctioned	Transaction
<b>Neo-Institutionalism (Sociology)</b> <i>DiMaggio &amp; Powell</i> <i>Scott, Meyer, Rowan</i>	Common belief Shared logics of action	Social network Organizational fields World system / societal	Constitutive schema	Comprehensible Recognizable Culturally supported	Imitation-convergence

**Table 1. Overview of institutional theoretical frameworks (adapted from Scott, 2008)**

### *Commons, Veblens*

Among the original works in this field of research, one should mention Commons (1931, 1950) and Veblen (1898). For Commons, an institution is a framework of laws or natural rights, a “collective action in control, liberation and expansion of individual action” (1931: 648). For him, the smallest unit of economic activity is called a “transaction” (a well-known notion which will later become the basis of Williamson’s theory) (Williamson 1975):

“Transactions are not the “exchange of commodities” but the alienation and acquisition, between individuals, of the rights of property and liberty created by society, which must therefore be negotiated between the parties concerned before labour can produce, or consumers can consume, or commodities be physically exchanged” (Commons, 1931: 649).

According to Commons, action is at the heart of the production and reproduction of order and “operating rules”.

For his part Veblen (1898) stresses the notion of habits of thought that are structured by institutions and which ultimately live inside us and structure our way of thinking. He rejects any form of determinism: “As Thorsten Veblen (1898) insisted, these habits of thought provide both the conceptual frameworks of meaning and enquiry, and the systems of values that ground our inspirations” (Hodgson, 1999: 28).

Other contributors including Marx, Berger, Luckman, Mead, Cooley, Parsons and Selznick (Scott, 2004) can also be mentioned. Their contributions to the definition and conceptualization of institutions and social structures have been used by many neo-institutionalists in the field of economics (Schmitter, 1990) and sociology (Drori et al., 2006). These fields have more or less explicitly appropriated the institutionalist heritage by applying it to a new research object, namely the organization.

### *Transaction Cost Economics (neo institutionalist economics)*

In the field of economics, Williamson (1975) has used Commons’s notion of ‘transaction’ to extend some aspects of Coase’s research (1937) about the nature of the firm. But, surprisingly, Veblen and Commons are rarely mentioned by Coase and Williamson (Rojot, 2005). A key research question in transaction cost economics (aka ‘new institutional economics’) has evolved around the comparison between cost of market use and cost of organizations (Gomez, 1996; North, 1990); the goal being to explicitly include organizational institutions (as opposed to the State as the level of analysis of institutional theories) in economic analysis. This has also been applied to the different institutional shapes assumed by firms. The legacy of the ‘early institutionalism’ is, however, rarely claimed by transaction cost economists.

### *Neo institutionalism (sociology)*

In the field of sociology, the relationship and continuity between old institutionalism and neo-institutionalism is often implicit (i.e. Commons and Veblen are not quoted) but real (Scott, 2004; Hodgson, 2004). The idea is to represent organizations as linked together and constructed by their environment (Rojot, 2005), and shaped by institutional logics (Friedland and Alford 1991). Scott (2004) proposes regulative, normative and cultural-cognitive “pillars” of institutional works based on how institutions and institutionalisation are generated by different natures

of pressures, compliance, and legitimacy within and between organisations. All these sociological perspectives are more or less present in the institutional literature about organizations (Ibid).

According to sociological neo-institutionalists, organizations belong to common “organizational fields” where populations of organizations experience certain common institutional constraints. Beyond a quest for efficiency and effectiveness, organizations seek legitimacy with regard to customers, suppliers, governments and society as a whole. This induces them to conform to different isomorphic pressures (coercive, normative and mimetic isomorphism, see DiMaggio and Powell, 1983, 1991). In the field of political science, Hall and Taylor (1996) further distinguish between rational choice institutionalism, historical institutionalism, and sociological institutionalism. Rational choice institutionalism is mainly related to economics (e.g. transaction cost economics), whereas historical and sociological institutionalism have a more social orientation.

Today, neo-institutionalism in sociology can be divided into several streams, all structured around distinct leaders (Scott, 2004). On one side are DiMaggio and Powell and on the other, Scott, Meyer and Rowan. The former have instrumentalised the concept of institution by means of the notion of “social network”. The latter rely on symbolic models. Macro or micro (Scott, 2004) levels of analysis provide another way of shedding light on the various neo-institutionalist sub-streams. Institutionalists also introduce other central concepts such as cultural persistence (Zucker, 1977) vs. cultural change.

Clearly, most institutionalists do not defend a determinist stance (i.e. people can also transform institutions). And, after a period during which neo-institutionalists (in particular those with a social focus) emphasized external and constraining social structures, some now tend to offer a conceptualization of social structures which is quite close to Giddens' (1984) view (see also Currie and Swanson, 2009). Scott (2004, 2008) thus insists on the virtuality of social structures that are only instantiated through agency.

Through our literature review we intend to examine how all these different research streams are mobilized over the studied period: are all the streams equally represented, and are they applied in the IS field in a consistent manner according to the seminal writings?

### 3. Research method

To explore how these institutional theoretical frameworks have been drawn upon in the IS research literature, we used a specific combination of techniques of data collection, processing and analysis, rarely used in IS research. The overall research strategy we followed is described in Table 2.

RESEARCH OBJECTIVE	METHOD	RESULTS
<p><b>Phase 1:</b> Identification of IS empirical articles dealing with institutional theoretical frameworks</p>	<p>Selection of papers from two databases (EBSCO, ABI)</p> <div style="text-align: center;"> <div data-bbox="619 1397 823 1541" style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Selection of relevant papers</div> <div style="text-align: center; margin-top: 10px;">↓</div> </div>	<p>107 empirical articles from 1999 to 2009</p>
<p><b>Phase 2:</b> Identification of main institutional theoretical frameworks quoted in empirical articles. Classification of their relationship with seminal theories.</p>	<div style="text-align: center;"> <div data-bbox="619 1671 823 1854" style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Main relationship with theories</div> <div style="text-align: center; margin-top: 10px;">↓</div> </div>	<p>Three relationships with theories are identified (direct, intermediary and combined).</p>

<p><b>Phase 3:</b> Analysis of methodological choices used to apply institutional approaches</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">             Descriptive and thematic analyses              ↓           </div>	<ul style="list-style-type: none"> <li>- Iterative design of a thematic dictionary of 'categories' based on sample.</li> <li>- Manual coding of papers.</li> <li>- Analysis of distribution of papers according to these categories.</li> </ul>
<p><b>Phase 4:</b> Identification of groups of articles using similar applications of institutional frameworks</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;">             Cluster analysis (Kmeans) enabled by a canonical analysis (Overals)              ↓              ANOVA test and discriminant analysis           </div>	<ul style="list-style-type: none"> <li>- Emphasis on 'dimensions' structuring the data.</li> <li>- Evaluation of groups of papers, according to broad application of institutional theoretical frameworks.</li> <li>- Validation of the cluster analysis: confirmation of the discrimination of dimensions and validation of the classification index of 'modalities'.</li> </ul>

**Table 2: Presentation of the research method to analyze the selected papers for cluster analysis**

Our first priority was to identify institutional and neo-institutional papers with empirical ambitions. We used several databases (detailed in the next section) to identify them. Once the selection was completed, we first identified the main institutional frameworks used in IS research. We then carried out a descriptive analysis (for instance, distribution of papers per year) to characterize the main features of papers using institutional frameworks over the studied period. Finally we performed a cluster analysis to see whether papers among the 107 selected articles have common features of applying institutional frameworks. This enabled us to develop a taxonomy of empirical papers. Each phase is detailed below.

### 3.1. Data Collection

Our primary objective was to find empirical IS research articles drawing on institutional or neo-institutional theoretical frameworks. Institutional IS papers with only theory were not included in our analysis since our focus is on the operationalization of conceptual meta-theoretical frameworks for empirical research.

After identifying specific search terms (Institutionalism+"information system", "institution"+"information system", "institution"+"information technology", "institutionalism"+"technology", "institutional"+"technology", query based on titles + abstract + keywords + full text) , we compiled a set of texts corresponding to our core target, namely institutional or neo-institutional papers with an empirical component. Cross validation was carried out by two co-authors of this paper. They separately processed the initial results of our search query. Their opinions diverged for 50% of a pilot initial sample, so these cases were discussed in depth. Our experience in the field of institutional research also helped us in the selection of papers given that several co-authors of this paper have been involved in previous institutional empirical research.

### 3.2. Coding of Articles

The final set of papers (Appendix 1) was then coded manually by means of thematic coding as described by Huberman and Miles (2002). Several co-authors collectively created a thematic dictionary using the following procedure described by Weber (1990):

- Creation of a first detailed definition of a preliminary set of categories, to allow starting with a first, common representation for the coding.
- A further sample of 20 papers was coded by three co-authors, resulting in several discussions about the initial

categories. This first round was an opportunity to refine the definition of some categories and also to add new categories. This was reiterated until researchers reached a consensus on the thematic dictionary and the way it should be used. It was a benchmark for the remaining coding process.

- Individual coding of the other articles, using the categories resulting from the preliminary test and the refined definitions of each identified category.
- Comparison of the 107 journal articles selected to check and confirm the relevance of the coding scheme.

The categories included in the thematic dictionary are shown in Table 3.

<b>CODE (name of the category – variable later used in cluster analysis)</b>	<b>MODALITIES</b>	<b>COMMENTS</b>
Methodological approaches	Action-research, survey, case study, experiment, meta-analysis (i.e. analysis of a set of pre-existing empirical research), hybrid approach (combination of these modalities)	
Level of analysis	Societal, inter-organizational, intra-organizational	
Period of publication	Year of article publication	
Target	Specific technical concept, specific information technologies, or information systems in general	
Nature of data collection	Short or longitudinal case study	
Nature of data analysis	First generation of quantitative techniques: simple or multiple linear regression, descriptive tests, etc.; Second generation quantitative techniques: structural equation modelling (such as LISREL or PLS), factorial analysis, dependency network diagrams, logistical regression, game theory techniques, etc.; Unstructured qualitative methods (no coding or thematic dictionary was mentioned); Structured qualitative methods (with coding and analysis of the coding)	When the paper did not specify how qualitative data analysis was achieved, we assumed that it was unstructured data analysis. At first we wanted to create a hybrid category (corresponding to combinations of our four main methods) but we did not find such hybrid use in any paper. All the examples clearly fit into a dominant research strategy.
International comparison	Yes or no	The intention was to measure the number of empirical papers with intercultural comparisons
Sector approach	Intra-administration sector, intra-manufacturing industry, intra-agricultural industry, intra-service industry, cross-sector	
Theoretical framework /applied/implemented	Mainly or partly institutional (i.e. early institutionalism); Mainly or partly neo-institutional	When it was explicit in the paper, we followed the positioning suggested by the authors



	in the field of sociology (e.g. Scott, Meyer, Rowan, DiMaggio, Powell); Mainly or partly institutional in the field of economics (e.g. Williamson and Coase, more generally the “new institutional economics”); Mixed or with an implicit positioning.	themselves.
Type of journal	Management, IS management, or others	

**Table 3: Thematic dictionary**

### 3.3. Data Analysis: from descriptive to cluster analysis

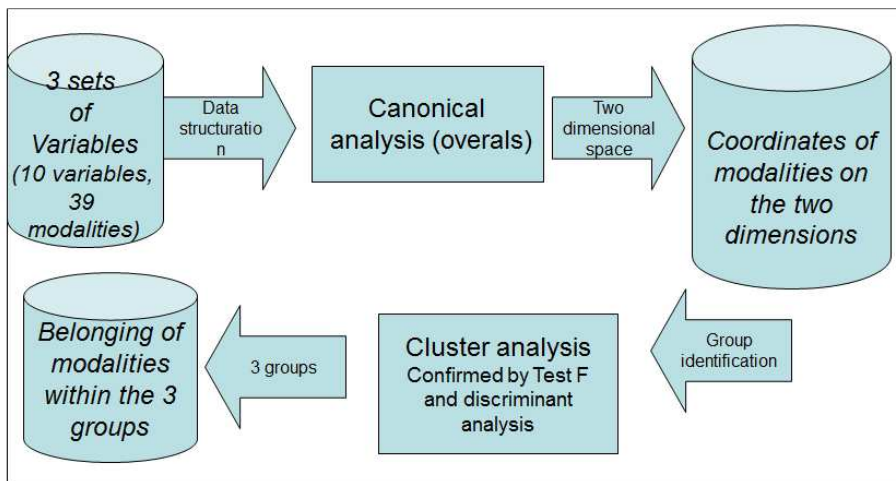
The four phases of our research method are described in Table 2. Two types of analysis were carried out: a descriptive analysis using our thematic coding and a cluster analysis based on canonical analysis. In the first phase, the coding of the articles was the object of a descriptive (and numerical) data analysis. The objective was to provide an overall description through counting codes and categories and their evolution over the years. Then, to work out a classification of the literature, a cluster analysis was performed by means of canonical analysis (Overals type, see Valette-Florence 1998 for a justification of the tandem analyses). The Overals algorithm was first described in Gifi (1981) and Van der Burg, et al. (1988). It enables to use nominal modalities to conduct a canonical analysis and then a cluster analysis. Similarly to multiple regression and canonical correlation analysis, Overals focuses on the relationships between sets. Inputs of Overals analysis are ‘modalities’ organized by sets. Outputs of an Overals analysis are coordinates of these modalities on n dimensions. For further information, see Appendix 2, Section 2.1.

To perform this kind of analysis, some data modification was required, i.e. regrouping of some ‘modalities’ (see Appendix 2, Section 2.3 for the final thematic dictionary) whose numbers of answers were too low, resulting in 39 modalities instead of the initial 41.

The construction of sets of variables is also an input of the Overals process. This was achieved through several successive iterations making it possible to highlight three sets (see Appendix 2, Section 2.2). These sets were identified from the meanings of the variables. Some variables defined the method used, others described publications, and some specified the research topic.

- Set 1: variables describing the method used in articles (methodological approach, nature of data collection, nature of data analysis);
- Set 2: variables describing publications (period and subject of publications);
- Set 3: variables describing the research topic (level of analysis, target, sectorial approach, topic, theoretical framework used, presence of an international comparison or not).

The figure below summarizes all the dynamics:



**Figure 1: Global roll out of the canonical and cluster analyses**

## 4. Main results

In the second research phase we identified the main institutional theoretical frameworks quoted in empirical papers and we present them in Section 4.1. The third phase analyzed the methodological choices used when applying institutional theoretical frameworks and are presented in Section 4.2. These two phases constitute our descriptive analysis. The fourth phase used cluster analysis to identify groups of papers applying institutional theories in similar ways and is presented in Section 4.3.

### 4.1 Major Institutional and Neo-institutional Theoretical Frameworks used in IS: from direct to combined uses

Many of our selected empirical papers refer to a small set of papers on the theory and history of institutional research in IS, namely Orlikowski and Barley (2001), Kling and Iacono (1989), Swanson and Ramiller (1997, 2004), Tornatzky and Fleischer (1990), Meyer and Rowan (1977), King et al. (1994), Limayem and Hirt (2003), Loebbecke and Huyskens (2006) and Cordella (2006).

Some papers carry out 'pure' or 'direct' institutionalist research to follow multiple stakeholders and institutions over long periods of time (e.g. de Vaujany, 2007; Avgerou, 2000). Some IS institutional researchers borrow and adapt institutionalist concepts into an 'intermediary' framework; whilst others 'combine' selected constructs from institutionalism and other 'grand' social theories to analyze empirical work (e.g. Wang, 2001; Firth, 2001; Backhouse et al., 2006). Thus, three uses of institutional theoretical frameworks seem to appear in the IS literature: **direct** use of institutional concepts; a specific **intermediary** framework is developed; or institutional theoretical frameworks are **combined** with other theoretical frameworks such as Actor-Network Theory or Structuration Theory. We illustrate each below with some of our selected empirical papers.

#### 4.1.1 Direct use

Some researchers (Avgerou, 2000; de Vaujany, 2007) directly use institutional concepts. They stay at the meta-perspective level and do not develop an intermediary framework (derived from institutionalism) or combine institutionalism with other theories. For instance, de Vaujany (2007) directly applies concepts such as "organizational fields" to the analysis of information and communication tools within the Roman Curia in the Vatican. No specific concepts are used or developed to make sense of IT-related phenomena.

The epitome of this direct or pure approach is found in transaction-cost oriented papers (the bulk of which deal with outsourcing). Most recent papers are comparative (putting the transaction cost model into perspective with other theoretical frameworks such as the resource-based view). Notions of "transactions", "asset specificity" or "atmosphere" are directly used to make sense of technological adoption. Seminal frameworks are not modified to make sense of IT phenomena.

#### 4.1.2 Intermediary use

'Middle range' theories have been described as:

“theories that lie between the minor but necessary working hypothesis and that evolve in abundance during day to day research and the all-inclusive systematic efforts to develop a unified theory that will explain all the observed uniformities of social behaviour, social organization and social change.” (Merton, 1968: 41).

Markus (2004:28) explains that in functionalism, middle range theories “have a definite substantive focus (e.g. theories of revolution, state formation) and are claims to generalize to all specific instances of their class of phenomena (e.g. all revolutions or state formations)”. We use the term ‘middle-range’ more loosely here, i.e. in a less functionalist way, following Weick (1995) and DiMaggio’s (1995) discussion of theory use and development in management studies. Weick (1995:385-386) argues that:

“products of the theorizing process seldom emerge as full-blown theories, which means that most of what passes for theory in organization studies consists of approximations (...) theory is less a product than a process (...) they have gradations of abstractness and generality (...) theory is a continuum rather than a dichotomy”.

Similarly, DiMaggio (1995:391) claims that “there is more than one kind of theory” and that they range from covering “laws” and “enlightenment” to “narratives”.

Therefore, what we see here as IS middle range theories are both a theorization and a focused (i.e. centered on specific IS phenomena such as IT adoption) conceptualized framework. Such is the case of the ‘organizing vision’ offered by Swanson and Ramiller (1997, 2004), or King et al.’s (1994) institutional ‘regulatory’ approach to IS, two middle range theories we found in analyzing the articles (see Table 4).

The organizing vision (OV) concept is derived mainly from institutional isomorphism, and assumes that there are focal ideas related to technology which are produced or reproduced and appropriated by an inter-organizational community (Swanson and Ramiller, 1997). This discourse helps to make sense, legitimize and mobilize people in the adoption of IT. Swanson and Ramiller (1997) invite researchers to trace OVs in specific forums (journals, conferences, trade shows...) and suggest that they take the shape of buzzwords or discourses which can be systematically analyzed (see also Carton et al., 2007 for an analysis of the uses of the OV model).

King et al.’s (1994) regulatory approach is also sensitized by institutional constructs to explain the dynamics of innovative changes in the IT domain. The authors build a matrix to provide an understanding of the role of institutions in IT innovation. Their matrix highlights that institutional intervention can be constructed at the intersection between the influence and regulatory powers of institutions, and the ideologies of supply-push and demand-pull models of innovation. For them, the power of institutional intervention can either be an influence (“the exerting of persuasive control over the practices, rules and belief systems” p.149), or a regulation (“direct or indirect intervention in behavior” p.149). Influence and regulation can play different roles depending on the “supply-push” or “demand-pull” forces driving the innovation. Moreover, in each of the four cells that compose the matrix, the authors provide examples of types of specific actions in which institutions might engage. Each of these actions can be classified as one of six general types: knowledge building, knowledge deployment, subsidy, mobilization, standard setting, and innovation directive. Thus, the authors offer an interesting framework to analyze the multifaceted role of institutions in the IT innovation process.

It can be seen that these two papers apply institutional theoretical frameworks by offering two intermediary middle-range theories focused on IS phenomena.

#### 4.1.3 Combined use

Some of our empirical IS articles base their analysis on a mix of institutional approaches and other approaches such as structuration theory (Thatcher et al., 2006; Barrett et al., 2001, Limayem and Hirt, 2003), actor network theory (Backhouse et al., 2006) or both (Chae and Poole, 2005). Conceptualization tends to be based on a theory other than institutionalism. For example Backhouse et al. (2006) examine the institutionalization of information security standards using the theory of ‘power circuits’ (Clegg, 1989). This provides them with more precise middle-range concepts, allowing the inclusion of external institutional forces and contingencies – powerful agents, resources, meanings, and relevant social and institutional groupings. They also use the middle range concept of ‘obligatory passage point’ (from actor-network theory) and apply it to the role of standards.

Such papers may also use methodological approaches advocated in the ‘other’ theory they draw from, for instance ethnographic methods in actor-network theory. Table 4 outlines the three main uses of institutional theories in the IS literature.

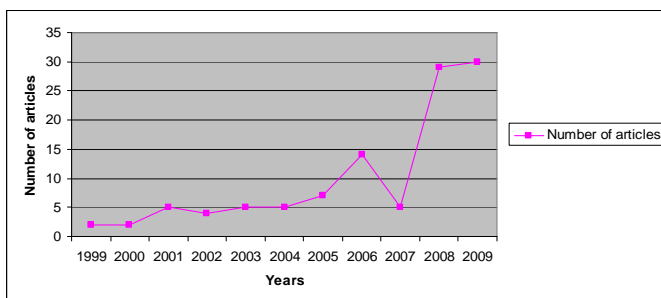
	DIRECT	INTERMEDIARY		COMBINED
<b>Principle</b>	Institutional theoretical frameworks and concepts are directly applied to IS objects.	A specific intermediary theory is developed to make sense of IS objects. This does not just rely on other theories or concepts, it is not just an importation. Two appear in the literature;		Institutional theoretical frameworks or concepts are combined with other meta-theories that can be inspired from seminal institutional works (e.g. structuration theory, actor network theory).
		The regulatory vision (King et al., 1994),	The organizing vision (Swanson and Ramiller, 1997).	
<b>Role of institutions</b>	Institutions are specific social structures (in strict accordance with institutional writings).	Institutions are forces of regulation or influence on IT.	Institutions influence adoption of a technology at the organization or micro level, which in turn feeds the evolution of institutions.	Institutions are specific social structures alive in organizations.
<b>Examples</b>	Avgerou (2000); de Vaujany (2007).	Damsgaard and Lyytinen (2001); Montealegre (1999); Damsgaard and Scheepers (1999); Silva and Figueroa (2002).	Wang (2001); Firth (2001); Wang and Swanson (2007); Carton, de Vaujany and Romeyer (2007); Bureau (2006); Tiwana et al. (2003).	Miranda, Kim; (2006), Srivastava, Teo (2006); Limayem, Hirt, (2003); Backhouse et al. (2006); Thatcher et al. (2006); Barrett et al. (2001); Chae and Poole (2005).

**Table 4: Three main uses of institutional and neo-institutional theoretical frameworks in IS research: direct, intermediary and combined**

Interestingly, it seems that (direct, intermediary, or combined) relationships with seminal frameworks also apply to structuralist IS literature as described by Jones and Karsten (2008). Some IS research directly applies Giddens' concepts (Walsham, 1993). Others rely, more or less faithfully on Giddens' structuration theory (see Jones, 1999) for specific concepts or frameworks; examples of this are the Technology-In-Practice lens developed by Orlikowski (2000) or Desanctis and Poole's (1994) Adaptive Structuration Theory. Lastly, some authors combine structuration theory concepts with other concepts or frameworks, for instance Walsham and Sahay (1999) who combine Structuration Theory with Actor-Network Theory. There may be similarities with our findings if a systematic comparison was carried out on the use and application of structuration theory in IS research, especially as it has been used for longer than institutionalism.

#### 4.2 Descriptive analysis of the thematic coding

Analysis of the databases resulted in the identification of 107 journal articles matching our criteria between 1999 and 2009. We were struck by the regular increase of empirical papers in recent years, in particular for 2006, 2008 and 2009. Taken together, 2008 and 2009 provide 54% of the total number of publications (see Figure 2 and Appendix 3 to see the distribution into modalities). We see in this a need for evaluation and adaptation of seminal institutionalist ideas to IT issues.



**Figure 2: Evolution in number of articles from 1999 to 2009**

More generally, our thematic analysis resulted in the following points summarised in Table 5.

<b>KEY RESULTS</b>
Case-study based research (41.1%) Mainly organizational (43.9%) or inter-organizational (33.6%). Societal and multi-level analyses are rare <sup>1</sup> Surveys represent 42.1 % of the database, but dominate in top ranked journals
A majority of qualitative studies based on a longitudinal perspective
Main theoretical framework applied in the empirical literature: the sociological stream of neo-institutionalism (30%)
Half of the studies are conducted in a cross cultural environment
Dominance of the direct neo sociological framework (30.8%) compared with the neo economics framework (7.5%)
Direct use of institutional concepts : 38.3% ( 2 modalities : MAIN NEO SOCIO AND MAIN NEO ECO) Intermediary frameworks : 45.9% (3 modalities MARG NEO, MARG NEO SOCIO, OTHERS) Combined frameworks : 15.9% (1 modality COMB)

**Table 5: Key results from the descriptive analysis**

Article coding according to methodological approaches shows that case-study based research (41.1%) and surveys (42.1%) are the two main approaches used.

Case studies are more prominent in second tier journals, suggesting that they may be more difficult to publish in top ranked journals. Another possible explanation is that case studies are not of sufficient quality, so get published (in large numbers, around 50%) in second tier journals. Furthermore, the distribution of the three uses of institutional theoretical frameworks shows a dominance of intermediary frameworks (45.9%). This dominance varied over the period studied. Combined and intermediary frameworks emerged only at the end of the period, between 2008 and 2009.

We found a dearth of research focusing on the adaptation or post-implementation phase. This is in line with Liang et al.'s (2007: 60) invitation:

“While it is reasonable to assume that institutional forces and top management, critical to successful adoption and implementation of ERP systems, might still be influential in the assimilation stage, we submit that a theoretical explanation regarding the effects of these factors on ERP assimilation during actual usage is still underdeveloped. Theory based empirical studies with a focus on the post-implementation assimilation of ERP systems, and on IT innovation in general, are clearly called for.”

We found that most of the methods and empirical devices employed in the studies only included those individuals deciding to implement the technology. Other stakeholders involved in the later phases of use and assimilation, such as top managers, users from the various departments or subsidiaries, line managers, supervisors, team leaders, external customers and suppliers, were seldom considered.

#### 4.3 Taxonomy of Empirical Articles

The results of the Overals analysis highlight two ‘dimensions’ that structured our population of articles (107), and thus provide the input for our cluster analysis (coordinates of the 39 modalities for the population of articles along the two dimensions). Finding the number of dimensions relevant in the Overals analysis was carried out by means of a Scree test, identifying two dimensions (with an inflexion point after these two dimensions, see Appendix 4.1). These two dimensions correspond to 64.7% of the variances explained (see Appendix 4.2 for details).

Using coordinates of modalities along the two dimensions as the input, the cluster analysis helped us put forward three groups of articles corresponding to three specific ways of using institutional theoretical frameworks (see

<sup>1</sup>This confirms Currie (2009)’s results about the levels of analysis most commonly found.

Appendix 4.3). These three groups were then validated by means of an ANOVA and discriminant analysis prior to final interpretation (see Appendix 4.4). The three groups identified by means of our cluster analysis (Kmeans method) are described in Appendix 5. Table 6 presents the classification of the modalities in each group.

CLUSTER	MODALITIES
<p><b>1</b></p> <p><b>Description, exploration</b> <i>No specific use of theory</i></p>	CASE STUDY, LONGITUDINAL, QUALI NON STRUCTURED, INTRA ORGANISATIONAL, YEAR 1999, YEAR 2000, YEAR 2001
<p><b>2</b></p> <p><b>Nomothetic analysis</b> <i>Direct, combined and intermediary uses of theory</i></p>	SURVEYS, EXPERIMENTATIONS, CROSS SECTIONAL, QUANTI FIRST GEN, QUANTI SECOND GEN, OTHER JOURNALS, MANAGEMENT JOURNALS, TECHNICAL CONCEPT, CROSS ORGANISATIONAL, NO, YES, CROSS SECTORIAL, INTRA SECTORIAL, MARG NEO ECO, MARG NEO SOCIO, MAIN NEO ECO, OTHERS, COMB, YEAR 2004, YEAR 2005, YEAR 2008, YEAR 2009
<p><b>3</b></p> <p><b>Neo sociological approach</b> <i>Direct use of theory</i></p>	OTHER METHODS, QUALI STRUCTURED, IS JOURNALS, IS IN GENERAL, SOCIETAL, MAIN NEO SOCIO, YEAR 2002, YEAR 2003, YEAR 2006, YEAR 2007

**Table 6: Classification of the modalities among the three groups**

Table 6 shows the distribution of the 39 modalities into three main groups. There is relative homogeneity in the distribution of modalities within these three groups. There are 7 modalities for Group 1, 22 for Group 2 and 10 for Group 3.

Group 1 is identified as “**descriptive exploratory approaches**”; it gathers modalities such as CASE STUDY, LONGITUDINAL, QUALI NON STRUCTURED, and INTRA ORGANISATIONAL. Years 1999, 2000 and 2001 appear in this first group that is characterized by a very specific methodology: case study, longitudinal data collection, non-structured qualitative data analysis, and an exclusively intra organizational level of analysis. The last characteristic is the absence of specific theorizing. We suggest (particularly in view of the years) that this group is exploratory. These articles do not apply any specific institutional theories so they cannot be classified into the direct, intermediary or combined uses we identified in our descriptive analysis in the previous section. Group 1 corresponds to the beginning of research into MIS institutional theoretical frameworks with little or no theorization and no sophisticated methodologies.

Group 2, labelled “**generalizing nomothetic analysis**”, is characterized by modalities such as SURVEYS, EXPERIMENTATIONS, CROSS SECTIONAL, QUANTI FIRST GEN, QUANTI SECOND GEN, OTHER JOURNALS, MANAGEMENT JOURNALS, TECHNICAL CONCEPT, CROSS ORGANISATIONAL, NO, YES, CROSS SECTORIAL, INTRA SECTORIAL, MARG NEO ECO, MARG NEO SOCIO, MAIN NEO ECO, OTHERS, COMB, referring to two periods, namely 2004-2005, and 2008-2009. These articles carry out a clear quantitative analysis from data collected in more than one firm, and study a specific technical object (such as ERP, CRM, etc...). The associated theoretical frameworks are neo-economics, partly neo-economics or partly neo-sociological. These studies are conducted in one or several countries (NO, YES). The direct, intermediary and combined uses of institutional theoretical frameworks are all represented in this group; Year 2008 and Year 2009 are part of this group and define a period where researchers massively mobilized intermediary and combined uses specifically. We can define this group as nomothetic, meaning that theorizing efforts seek to provide generalizations through all possible ways of applying institutional theories. It aims at testing rather than qualifying or modifying institutional concepts (see Currie, 2009 for a criticism of this type of work). This group conforms to dominant standards familiar to management researchers: focus on one specific technology and use of quantitative methodologies. It is published in general management journals and not IS journals.

Finally, modalities such as OTHER METHODS (META, HYBRIDS), QUALI STRUCTURED, IS JOURNALS, IS IN GENERAL, SOCIETAL, MAIN NEO SOCIO are part of Group 3 entitled “**Neo sociological approach**”. Group 3 is smaller in size than Group 2. Two periods are associated with this group: 2002-2003, and 2006-2007. It is characterized by a clear theoretical framework relying mainly on the sociological institutional field (MAIN NEO SOCIO). Articles are published in IS journals. The objects of analysis are not specific technologies but rather IS in general, with a societal perspective. Methodological approaches are meta-analysis (using sets of pre-existing empirical research) or hybrid (mixed methods). The two periods making up this group of articles (2002- 2003, and 2006–2007), represent an evolution and a later stage in the use of institutional theoretical frameworks in IS

research. Direct use of institutional theoretical frameworks (MAIN) is the only way this group theorizes. No intermediary concepts are mobilized, so direct application of original institutional theory dominates. It uses less common methodologies, with a societal perspective and a more original approach than the usual management perspective. It addresses IS researchers and the articles are published in IS journals.

It seems that Group 1 corresponds to the emergence of institutional approaches in IS with an exploratory stance; Groups 2 and 3 embody two different parallel trajectories of empirical research on IT and institutions. It remains to be seen whether this phased approach corresponds to a general cumulative cycle of theory construction, or whether other factors also have an influence on disciplinary conceptual development.

## 5. Discussion, contributions and avenues for further research

This paper explores the ways in which institutional theories are applied in the IS empirical research literature. At this juncture, it is worth bringing in Gregor's (2006: 611-613) distinctions between different types of theorising. She distinguishes between five types: types I (analysis) and II (explaining) which both follow a sociological research model; and types III, IV and V (prediction, design and action) which all adopt a more scientific model. The last three are variance-type theories and are used in the majority of IS research. Their components include causal explanations, prescriptive statements, testable propositions and hypotheses that aim at generalization and are, arguably, easier to operationalize through variables and statistical analysis.

We can therefore conclude that the use of institutional theoretical frameworks in IS research seems to have taken place in the following forms: explore and describe without theorization; generalize through applying all possible ways of theorizing, particularly through intermediate and combined uses of concepts; and theorize sociologically through direct use of institutional concepts.

### 5.1 Theoretical, empirical and methodological contributions

Our first contribution relates to examining the evolution of the IS research discipline and its incorporation of theory construction, methodological approaches and empirical focus. This is fundamental to understanding any discipline, yet these aspects are rarely looked at simultaneously. Mignerat and Rivard (2009) for example, provide an overview of those institutional theories that have contributed to IS research, but they do not analyze the theorizing process itself (e.g. the development or use of specific intermediary concepts).

Our results confirm the dynamism of the IS institutional research stream, as evidenced by the increase in number of articles between 1999 and 2009. We also highlight **a certain conformity in methodological, theoretical and empirical terms**. Looking at the IS research field through the lens of institutional theory can be relevant in as much as phenomena like dominance of certain types of research (cross sectional) but not others (cross-cultural studies) and different mechanisms for theory construction have been identified.

We use Gregor's distinction of different types of theories to put into perspective our results. For Gregor, types I and II are process-type theories; they are statements of relationships (not causality) providing a lens for viewing or explaining the world, and explanations of sets of events based on a story or historical narrative. This means that the concepts cannot be operationalized as such (unlike types III, IV and V) and there are more difficulties in theorizing, developing and applying process-type concepts. The IS institutional research stream remains **dominated by cross-sectional empirical studies** in which a quantitative nomothetic mode of operationalization (i.e. types III, IV, or V of Gregor) dominates, especially in top ranked journals, as already noted by Currie (2009). Currie found fewer studies on the processes of institutionalization than on the effects of institutionalism. We complement this through our findings that: cross-cultural aspects have remained under-explored; and few papers propose an innovative methodological approach, such as mixing quantitative and qualitative techniques, whether from a cross sectional or longitudinal perspective.

We also found **that IS researchers have evolved from untheorized exploration** (Group 1 of our cluster analysis, see Table 6) **to building intermediary theories and concepts to make sense of empirical dynamics**. IS scholars have needed to build IS-relevant intermediary concepts to apply institutional theoretical frameworks, leading to a variety of frameworks which are only marginally anchored in the institutional field. One interpretation of this can be that inclusion of technology and its materiality into discussions about institutions may require both adaptation of institutional concepts (intermediary), and mobilization of other theoretical frameworks (combination) which concentrate on technical artefacts (e.g. actor network theory). Both are represented in Group 2. This tendency was particularly pronounced in 2008-09, possibly after a maturation process of the research field. We can explain this through a pattern of IS research in its use of meta theories: first untheorized exploration (Group 1); then both, in parallel: a search for nomothetic generalization using intermediary and combined uses of

institutional concepts (Group 2); as well as a full application of neo-institutional approaches through direct use of institutional theories which are closer to seminal works (a smaller Group 3). These may be necessary disciplinary stages the field of IS has to go through to address the specificities of its object of study, and to fully engage with, and possibly contribute to social theories. Niederman et al. (2009) have argued that using 'reference discipline theories' in IS research should be encouraged and broadened – although they also examine their harmful effects and propose alternatives aimed at building and expanding indigenous IS theory, such as metatriangulation, and IS as a practical science or design science.

Our work also **indirectly points to certain inconsistencies when compared to seminal writings in the institutional literature** in terms of empirical time span. As Mignerat and Rivard (2005, 2009) point out, cross-sectional research dominates and contrasts with seminal institutional approaches; the latter require longitudinal study, long-term and systemic exploration of social institutions. We found that the bulk of the IS empirical literature uses mainly short-term (i.e. spanning only a few years at the most) case study approaches; it can lead to a lack of debates that can enrich a discipline. This is not really in line with institutionalist ambitions, especially when compared with Veblen (1898) and his study of the emergence of a leisure class, or Kieser (1989) and DiMaggio and Powell (1991) in their analyses of formal organizations, where they follow long-term, secular organizational evolution. Of course, IS objects are quite recent and change rapidly, but their impact can also be assessed from a longer-term perspective than is currently done. It would support the investigation of how the institutionalization of technology occurs in organizations (see Pishad et al., 2012).

**The final contribution we make is methodological.** This research has provided an opportunity to examine the different ways of using and applying abstract theoretical frameworks. The concrete result is a set of criteria (i.e. the thematic dictionary) that supports their analysis. This set of criteria was validated through a collective process and the 107 articles that form the basis of our research were examined using this analytical grid. Beyond classic thematic and citation analysis, the combination of canonical and cluster analyses also provides an innovative way of mapping a stream of literature. Through a rigorous analysis process, it can highlight relations between a research topic, a specific methodology design (level of analysis, nature of data collection, nature of data analysis) and time of publication. This has not been carried out in the IS literature and has rarely been used in other management research fields. Apart from one application by Valette-Florence (1998) in the marketing field, we did not find any other studies using this integrated methodological approach to map research streams in the management field. The results are interesting: we constructed a set of groups which clarify the structure and evolution of empirical IS institutional research. As a result, and by way of comparison, we suggest further use of this methodology to analyze how the IS literature has drawn on other theoretical frameworks.

## 5.2 Further research

We suggest pursuing a better understanding of the application of institutionalist theories through analyzing the evolution of intermediary concepts such as the "organizing vision" construct. In line with work by Currie (2009), we suggest that multi-level and combined modes could generate richer insights that may come from either mixing several sociological theories (as illustrated by Backhouse et al., 2006 or more recently Nielsen et al., forthcoming) which is still not very common in IS research, or by mixing economic and sociological theories (which may well be groundbreaking in IS research). This sort of study would also be particularly suitable for addressing cross-cultural aspects which we found have remained under-explored. Blending theoretical stances, methodological (e.g. Magnusson and Bygstad, 2013) and empirical approaches may provide ideas for IS institutional researchers, especially as institutionalizing and legitimating technologies is often assumed to be universal and acultural. It could also prevent institutional (what is possible and rewarded) isomorphism in researching and publishing in our field. This may well be responsible for limited applications of institutionalist theories to analyze specific IT objects at one point in time, rather than longitudinal methodologies or 'direct' use of theory (Group 3), which is closer to seminal theories. Comparison of institutionalist IS research with IS research drawing on other reference theories (e.g. structuration theory, actor-network theory, or sociomaterial approaches) could be helpful to explore their own blends of theory use and application, methodological approaches and empirical objects.

More broadly, when using institutional approaches, it would be valuable to put the dynamic of organizations or populations of organizations into perspective over a long period of time, possibly using historical methods, still rarely used in IS research (Mitev and de Vaujany, 2012). Future research could potentially deal with the way actors have grappled with information issues over time. The study of very old institutions or administrations may be helpful. 'New history' methods and concepts might also be helpful in understanding isomorphism over very long periods of time (Le Goff, 2006). Innovative longitudinal research combining qualitative and quantitative techniques (e.g. Barley, 1986) could be developed to a greater extent by IS institutionalists (Currie, 2009). A future



investigation of the structure of IS institutional research (in particular empirical studies) could analyze how certain specific institutional concepts ("organizational fields" or "isomorphism") have been applied.

In relation to the use of direct, intermediary and combined constructs we also suggest that the background and theoretical inclinations of researchers matter: quantitative researchers may prefer intermediary constructs to 'measure' things; whereas more qualitatively oriented researchers may directly import concepts from seminal frameworks to make sense of institutional dynamics. Interesting future research could try to correlate educational and professional backgrounds of researchers to their use of constructs and methods. Methodological interdependencies could then be explored in more detail in relation to ways of using and applying theory.

Finally, a cross analysis of IS institutional research with other management fields such as strategic management or human resource management could be a way of shedding light on specificities of the IS field, mixing IS issues with organizational issues (Heugens and Lander, 2009). Combining the resource-based view across management and economics provides an example of a theoretical synthesis which has enriched theories of competitive advantage in the strategy field (Oliver 1997). Bowen and Weiersema (1999) have also compared the use of cross-sectional versus longitudinal methods in strategic management.

## 6. Conclusion

In investigating the mechanisms by which IS researchers have applied institutional and neo-institutional theoretical frameworks, we highlight several contributions: confirmation of the dynamism of the IS institutional research stream, as evidenced by the increase in number of articles between 1999 and 2009, and a maturation process of the IS field in investigating a social theory. We also show a certain conformity in methodological, theoretical and empirical terms. The quest for legitimacy and disciplinary identity by IS researchers reflects institutional pressures within the IS research environment. As already suggested by other authors (e.g. De Vaujany et al., 2011), a better understanding of the relations between the institutional academic pressures we deal with and their effects on our intellectual journeys may foster higher levels of reflexivity and innovative conceptualization and different writing practices and may ultimately be more useful for developing strong theories.

At this stage, we can identify a reasonable explanation for our findings. Journal editors and reviewers (and probably authors themselves) may well understand the importance of sociological, longitudinal studies in institutional theoretical frameworks (Gregor's types I or II, Group 3 in our study), but they may prefer economics orientated cross-sectional papers and surveys due to faster data collection; and to the fact that they do not require adaptation through the development of intermediary concepts, which is a more challenging option. This may account for the lack of specifically IS institutional theoretical frameworks and theory building strategies in IS institutionalist literature (Currie, 2009). Based on the research methods element that we included in our exploration, we can also suggest that more multi-level (micro, meso, macro) case study research may provide innovative thinking, possibly leading to stronger theorizing.

To conclude, according to Zahra and Newey (2009) management researchers frequently use three generic modes when building theories at the intersection of fields and/or disciplines. They are:

- Borrowing concepts/theories from one field or discipline and superficially intersecting with those of another;
- Borrowing concepts/theories from one field or discipline and intersecting with those of another in a way that extends one or more of the theories;
- Borrowing concepts/theories from one field or discipline and intersecting with those of another in a way that not only extends one or more of the intersecting theories, but transforms the core of fields and disciplines of which they are a part.

Zahra and Newey (2009) claim that the first and second are frequently used while the third is rarely used, yet the latter offers the most potential to have an impact across domains. They suggest that institutional theory (as well as organizational economics, population ecology or organizational learning) could inform sister disciplines such as marketing, international business, entrepreneurship, production management and human resource management. As IS researchers we should be open to some of these ideas to become more innovative in our investigation of the relationships between technology, people, organizations and institutions.

## References

Avgerou, C. (2000), "IT and Organizational Change: an Institutional Perspective," *Information Technology & People*, (13:4), pp. 234-262.

- Backhouse, J., Hsu, C.W. and Silva, L. (2006), "Circuits of power in creating de jure standards: shaping an international information systems security standard," *MIS Quarterly*, (30:4), pp. 13-38.
- Barley, S. (1986), "Technology as an Occasion for Structuring: Evidence from Observations of CT Scanners and the Social Order of Radiology Departments," *Administrative Science Quarterly*, (31), pp. 78-108.
- Barley, S. and Tolbert, P.S. (1997), "Institutionalization and Structuration: Studying the Links between Action and Institution," *Organization Studies*, (18:1), pp. 93-117.
- Barrett, M. Sahay, S. and Walsham, G. (2001), "Information Technology and Social Transformation: GIS for Forestry Management in India," *The Information Society* (17), pp. 5-20.
- Bureau, S. (2006), "La Professionnalisation des Nouveaux Métiers Liés aux Technologies de l'Information et de la Communication: un Déterminant dans les Processus d'Organisation d'une Fonction ? Le cas des technologies web," *Systèmes d'Information et Management*, (11:1), pp. 5-22.
- Bowen, H.P. and Weiersema, F. (1999), "Matching Method to Paradigm in Strategy Research: Limitations of Cross-Sectional Analysis and Some Methodological Alternatives," *Strategic Management Journal*, (20:7), pp. 625-636
- Carton, S., de Vaujany, F.X. and Romeyer, C. (2007), "Organizing Vision and Local IS Practices: a France-US Comparison," *Communications of Association for Information Systems*, (19:11), pp. 205-240.
- Chae, B. and Poole, M.S. (2005), "The surface of Emergence in Systems Development: Agency, Institutions, and Large-scale Information Systems," *European Journal of Information Systems*, (14:1), pp. 19–36.
- Clegg, S.R. (1989). *Frameworks of power*, Sage, London, UK.
- Coase, R. (1937), "The Nature of the Firm," *Econometrica*, (4), pp. 386-405.
- Commons, J.R. (1931), "Institutional Economics," *American Economic Review*, (21), pp. 648-657.
- Commons, J.R. (1950), *The Economics of Collective Action*, MacMillan, New York.
- Cordella, A. (2006), "Transaction Costs and Information Systems: Does IT Add Up?" *Journal of Information Technology*, (21:3), pp. 195-202.
- Courpasson, D. (2001), "La Pensée de Giddens à l'Usage des Gestionnaires," *Revue Française de Gestion*, juillet-août, pp. 125-132.
- Currie, W. and Swanson, B. (2009), Editorial, in Special issue on institutional theory in information systems research: contextualizing the IT artifact, *Journal of Information Technology*, (24), pp. 283-285.
- Currie,W.(2009), "Contextualising the IT Artifact: Towards a wider research agenda for IS using institutional theory", *Information Technology & People*(22:1), pp. 63–77.
- Damsgaard, J. and Lyytinen, K. (2001), "The Role of Intermediating Institutions in the Diffusion of Electronic Data Interchange (EDI): How Industry Associations Intervened in Denmark, Finland, and Hong Kong," *The Information Society*, (17:3), pp. 195-210.
- Damsgaard, J. and Scheepers, R. (1999), "A Stage Model of Intranet Technology Implementation and Management," *Proceedings of the Seventh European Conference on Information Systems, Copenhagen Business School, Copenhagen (Denmark)*, 23-25 June.
- Desanctis, G. and Poole, M.S. (1994), "Capturing the Complexity in Advanced Technology Use: Adaptive structuration theory," *Organization Science*, (5:2), pp. 121-146.
- De Vaujany, F.X. (2007), "Between Eternity and Actualization: the Difficult Co-evolution of Fields of Communication in the Vatican", *Communications of the AIS*, (18:23), pp. 355-391.
- De Vaujany, F.X, Walsh, I. and Mitev, N. (2011) A historically grounded critical analysis of research articles in IS, *European Journal of Information Systems*, 20, pp. 395-417.
- DiMaggio, P.J. (1995), "Comments on 'What theory is not' [by Karl Weick same issue]", *Administrative Science Quarterly*, (40:3), pp.391-397.
- DiMaggio, P.J. and Powell, W.W. (1983), "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality," *American Sociological Review*, (48:2), pp. 147-160.

- DiMaggio, P.J. and Powell, W.W. (1991), "Introduction" in *The New Institutionalism in Organizational Analysis* (Powell WW and DiMaggio PJ, eds), pp 1-38, University of Chicago Press, Chicago.
- Drori G.S., Meyer J.W., Hwang H., eds (2006), *Globalization and Organization: World Society and Organizational Change*. Oxford, UK: Oxford University Press.
- Firth, D.R (2001), "The Organizing Vision for Customer Relationship Management", *ACIS, proceedings*.
- Flynn, D. and Gregory, P. (2004), "The use of social theories in 20 years of WG 8.2 empirical IS research", IFIP WG 8.2, Manchester. July 15-17, in Kaplan, B., DeGross, J.I., Wastell, D., Truex, D.P. and Wood-Harper, A.T. (eds), *Information Systems Research: Relevant theory and informed practice: looking forward from a 20 year perspective on IS research*, pp. 365-378, NY: Springer-Verlag.
- Friedland R, Alford R. 1991. Bringing society back in: symbols, practices, and institutional contradictions. In *The New Institutionalism in Organizational Analysis*, ed. WW Powell, P DiMaggio, pp. 223-62. Chicago: Univ. Chicago Press
- Giddens, A. (1984), *The Constitution of Society*, University of California Press, Berkeley.
- Gifi, A. (1981), *Nonlinear Multivariate Analysis*. Leiden: Department of Data Theory.
- Gomez, P.Y. (1996), *Le Gouvernement de l'Entreprise*, Interéditions, Paris.
- Gregor, S. (2006), "The Nature of Theory in Information Systems", *MIS Quarterly*, (30:3), pp. 611-642.
- Hall, P.A., and Taylor, RCR. (1996). "Political science and the three new institutionalisms", *Political Studies*, (57), pp. 44:936.
- Heugens P. and Lander, M. (2009), "Structure! Agency! (and other Quarrels): a Meta-analysis of Institutional Theories of Organization", *Academy of Management Journal*, (52.1).
- Hodgson, G. (1999), "Marching to Promised Land? Some Doubts on the Supposed Theoretical and Policy Implications of Critical Realism," *Workshop on Realism and Economics*, King's College, Cambridge 26 April.
- Hodgson, G. (2004), *The Evolution of Institutional Economics: Agency, Structure and Darwinism in American Institutionalism*, Routledge, London and New York.
- Huberman, M. and Miles, M.B. (2002), *The Qualitative Researcher's Companion*. Sage, Thousand Oaks.
- Jones, M.R. and Karsten, H. (2008), "Giddens's Structuration Theory and Information Systems Review," *Management Information Systems Quarterly*, (32:1), pp. 127-157.
- Jones, M. (1999), "Structuration Theory," In *Rethinking management information systems: an interdisciplinary perspective* (Currie W. and Galliers B. Eds.), pp.103-135, Oxford: Oxford University Press.
- Jones, M. (2000), "The Moving Finger: the Use of Social Theory in WG 8.2 Conference Papers," 1975-1999. In *Organizational and Social Perspectives on Information Technology* (Richard Baskerville, Jan Stage and Janice I. DeGross, Eds), Boston: Kluwer Academic Publishers.
- Jones, M. (2003), "The Expert System: Constructing Expertise in an IT/management Consultancy," *Information and Organization*, (13:4), pp. 257-284.
- Kieser, A. (1989), "Organizational, Institutional, and Societal Evolution: Medieval Craft Guilds and the Genesis of Formal Organizations," *Administrative Science Quarterly*, (34:4), pp. 540-564.
- King, J.L., Gurbaxani, V. Kraemer, K.L., McFarlan, F.W., Raman, K.S. and Yap, C.S. (1994), "Institutional Factors in Information Technology Innovation," *Information Systems Research*, (15:2), pp. 136-169.
- Klecun, E. (2004), "Conducting Critical Research in IS: can Actor-network Theory Help?" In *Information systems research* (Kaplan, Bonnie and Truex III, Duane P and Wastell, David and Wood-Harper, Trevor and DeGross, Janice Eds) pp. 259-274, Kluwer Academic Publishers, Dordrecht.
- Kling, R. and Iacono, S. (1989), "The Institutional Character of Computerized Information Systems," *Office, Technology and People*, (5:1), pp. 5-27.
- Le Goff, J. (2006), *La Nouvelle Histoire*. Editions Complexe, Paris.

- Liang, H., Sharaf, N., Hu, Q. and Xue, Y. (2007), "Assimilation of Enterprise Systems: the Effects of Institutional Pressures and the Mediating Role of Top Management," *Management Information Systems Quarterly*, (31:1), pp. 59-89.
- Limayem, M. and Hirt, S. (2003), "Force of Habit and Information System Usage: Theory and Initial Validation," *Journal of the Association for Information Systems*, (4), pp. 65-97.
- Loebbecke, C. and Huyskens, C. (2006), "What Drives Netsourcing Decisions? An Empirical Analysis," *European Journal of Information Systems*, (15:4), pp. 415-423.
- Magnusson, J and Bygstad, B. (2013), "Why I act differently: studying patterns of legitimation among CIOs through motive talk", *Information Technology and People*, 26(3), 265-282.
- Markus, .L. (2004), "Fit For Function: Functionalism, Neo-Functionalism, and Information Systems," In Mingers, J. and Willcocks, L. (Eds.) *Social Theory and Philosophy for IS*, London: John Wiley & Sons Ltd, pp. 27-55.
- Merton, R.K. (1968), *Social Theory and Social Structure*. Free Press, New York.
- Meyer, J.W. and Rowan, B. (1977), "Institutional Organizations: Formal Structure as Myth and Ceremony," *American Journal of Sociology*, (83), pp. 340-63.
- Mignerat, M. and Rivard, S. (2005), "Positioning the Institutional Perspective in Information Technology Research," *Proceedings of Administrative Sciences Association of Canada (ASAC)*, Toronto, May.
- Mignerat, M. and Rivard, S. (2009), "Positioning the institutional perspective in information systems research", *Journal of Information Technology*, Special Issue on Institutional Theory in Information London, (24:4), pp. 369-391.
- Miranda, S.M. and Kim, Y.M. (2006), "Professional versus Political Contexts: Institutional Mitigation and the Transaction Cost Heuristic in Information Systems Outsourcing," *MIS Quarterly*, (30:3), pp. 725–753.
- Mitev, N. and de Vaujany, F.X. (2012), "Seizing the opportunity: towards a historiography of information systems", *Journal of Information Technology*, (27), pp. 110-124.
- Monod, E. (2004), "French Theories in IS: an Exploratory Study?" in *Americas Conference on Information Systems (AMCIS)*, proceedings.
- Montealegre, R. (1999), "A Temporal Model of Institutional interventions for Information Technology Adoption in Less-Developed Countries," *Journal of Management Information Systems*, (16:1), pp. 207-232.
- Niederman, F., Gregor, S., Grover, V., Lyytinen, K. and Saunders, C. (2009), "ICIS 2008 Panel report: IS has outgrown the need for reference discipline theories, or has it?" *Communications of the Association for Information Systems*, (24:37), pp. 639-656.
- Nielsen, A.J., Mathiassen, L. and Newell, S. (forthcoming), "Theorization and Translation in IT Institutionalization: Evidence from Danish Home Care", *MIS Quarterly*.
- North, D.C. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge University Press.
- Oliver, C. (1997), "Sustainable competitive advantage: combining institutional and resource-based views", *Strategic Management Journal*, (18), pp. 697-713.
- Orlikowski, W. (2000), "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations," *Organization Science*, (11:4), pp. 404-428.
- Orlikowski, W. and Barley, S. (2001), "Technology and Institutions: What Can Research on Information Technology and Research on Organizations Learn from Each Other," *MIS Quarterly*,(25:2), pp. 145-165.
- Pishad, A., Haider, A. and Koronios A. (2012) "Technology and Organizational Evolution: An Institutionalisation Perspective", *Journal of Innovation and Business Best Practices* 12 p.
- Rojot, J. (2005), *Théories des Organisations*, Editions ESKA, second edition.
- Schmitter P. (1990), "Sectors in modern capitalism : Models of Governance and Variations in Performance" in *Labour Relations and Economic Performance*, edited by Brunetta R. and Dell'Aringa, pp. 3-39, Houndmills, UK : MacMillan
- Scott, W.R. (2001), *Institutions and Organizations*. Thousand Oaks, CA: Sage.

- Scott, W.R. (2004), "Institutional Theory: Contributing to a Research Program," In *Great Minds in management: the process of theory Development* (K.G. Smith and M.A Hitt, eds), Oxford UK: Oxford university Press.
- Scott W.R. (2008), *Institutions and Organizations*, Sage Publications, Inc. Third Edition
- Selznick, P.K. (1957), *Leadership in Administrations*, Peterson and co, Avanstons, New York.
- Silva, L. and Figuerioa, E. (2002), "Institutional Intervention and the Expansion of ICTs in Latin America, the Case of Chile," *Information Technology and People*, (5:1), pp. 8-25.
- Srivastava, S.C. and Teo, T. (2006), "Determinants and Impact of E-government and E-business Development: a Global Perspective," *ICIS Proceedings*.
- Swanson, E.B. and Ramiller, N.C. (1997), "The Organizing Vision in Information Systems Innovation," *Organization Science*, (8:5), pp. 458-474.
- Swanson, E.B. and Ramiller, N.C. (2004), "Innovating Mindfully with Information Technology," *MIS Quarterly*, (28:4), pp. 553-583.
- Thatcher, J.B, Brower, R.S. and Mason, R. (2006), "Organizational Fields and the Diffusion of Information Technologies within and across the Nonprofit and Public Sectors: A Preliminary Theory," *The American Review of Public Administration*, (36:4), pp. 437-454.
- Tiwana, A. Bharadwaj, A. and Sambamurthy, V. (2003), "The Antecedents of Information Systems Development Capability in Firms: A Knowledge Integration Perspective", *ICIS Proceedings*.
- Tornatzky, L.G. and Fleischer, M. (1990), *The processes of Technological Innovation*, Lexington MA, Lexington books.
- Valette-Florence, P. (1998), "A Causal Analysis of Means-end Hierarchies in a Cross-cultural Context: Methodological Refinements," *Journal of Business Research*, (42), pp. 161-166.
- Van Der Burg, E., De Leeuw, J. and Verdegaal, R. (1988), "Homogeneity Analysis with  $k$  sets of Variables: an Alternating Least Squares Method with Optimal Scaling Features," *Psychometrika*, (53), pp. 177-197.
- Veblen, T. (1898), *The Theory of Leisure Class*. New Brunswick, Transaction Publishers.
- Walsham, G. (1993), *Interpreting Information Systems in Organizations* (1st ed.). John Wiley & Sons, Inc., New York, NY, USA.
- Walsham, G. and Sahay, S. (1999), "GIS for district-level administration in India: problems and opportunities", *MIS Quarterly*, (23:1), pp. 39-65.
- Wang, P. (2001), "What Drives Waves in Information Systems? The Organizing Vision perspective," *Twenty-second International Conference of Information Systems, ICIS proceedings*, pp. 410-416.
- Wang, P. and Swanson, E.B. (2007), "Launching professional services automation: Institutional entrepreneurship for information technology innovations," *Information and Organization*, (17:2), pp. 59-88.
- Weerakkody, V., Dwivedi, Y.K., and Irani, Z. (2009), "The diffusion and use of institutional theory: a cross-disciplinary longitudinal literature survey", *Journal of Information Technology*, (24:4), pp. 354-368
- Weick, K.E. (1995), "What theory is not, theorizing is", *Administrative Science Quarterly*, (40:3), pp. 385-390.
- Williamson, O.E. (1975), *Market and Hierarchies. Analysis and Antitrust Implications*, The Free Press, New York.
- Zahra, S.A. and Newey, L.R. (2009), "Maximizing the Impact of Organization Science: Theory-building at the Intersection of Disciplines and/or Fields", *Journal of Management Studies*, (46:6), pp. 1059-1075.
- Zucker, L.G. (1977) "The role of Institutionalization in Cultural Persistence", *American Sociological Review*, (42:5), p. 726-743.

## APPENDICES

### Appendix 1: Papers selected for analysis

Number	Reference	Articles mentioned in part 4.1
1	Teo H.H., Wei K.K., Benbasat I. (2003) "Predicting Intention to Adopt Interorganizational Linkages : an Institutional Perspective" <i>MIS Quarterly</i> vol27 n <sup>1</sup>	
2	Barrett M., Sahay S., Walsham G. (2001) "Information Technology and Social Transformation: GIS for Forestry Management in India" <i>The Information Society</i> 17, p5-20	*
3	Chatterjee D., Grewal R., Sambamurthy V. (2002) "Shaping Up for E-commerce :Institutional Enablers of the Organizational Assimilation of Web Technologies" <i>MIS Quarterly</i> vol 26 n <sup>2</sup> p.65-89	
4	Damsgaard J., Lyytinen K. (2001) "The role of Intermediating Institutions in the Diffusion of Electronic Data Interchange (EDI):How Industry Associations Intervened in Denmark, Finland, and Hong Kong" <i>The Information Society</i> , vol17 p.195-210	*
5	Lal K. (2001) "Institutional Environment and the Development of Information and Communication Technology in India" <i>The Information Society</i> , vol17, p.105-117	
6	Tillquist J., King J.L., Woo C. (2002) "A Representational Scheme for Analyzing Information technology and Organizational Dependency" <i>MIS Quarterly</i> vol 26, N <sup>2</sup> p. 91-118	
7	Sharma R., Yetton P. (2003) "The Contingent Effects of Management Support and Task Interdependence on Successful Information Systems Implementation" <i>MIS Quarterly</i> vol27 n <sup>4</sup> p. 533 -555	
8	Montealegre R. (1999) "A temporal Model of Institutional interventions for Information Technology Adoption in Less-Developed Countries" <i>Journal of Management Information Systems</i> vol16 n <sup>1</sup>	*
9	Damsgaard J., Truex D. (2000) "Binary trading relations and the limits of EDI standards :the procrustean bed of standards" <i>European Journal of Information Systems</i> vol9 p.173-188	
10	Silva L., Figueroa E. (2002) "Institutional intervention and the expansion of ICTs in Latin America, the case of Chile" <i>Information Technology and People</i> , vol15 n <sup>1</sup>	*
11	Lamb R., King J.L., Kling R. (2003) "Informational environments :Organizational Contexts of Online Information Use" <i>Journal of the American Society for Information Science and Technology</i> , vol54 n <sup>2</sup>	
12	Avgerou C. (2000) "IT and Organizational Change: an institutionalist perspective" <i>Information Technology and People</i> vol 13 n <sup>4</sup>	*
13	Damsgaard J., Scheepers R. (1999) "Power, influence and intranet implementation. A safari of South African Organizations" <i>Information Technology and People</i> vol12 n <sup>4</sup>	*
14	Bada A.O., Aniebonam M.C. (2004) "Institutional Pressures as Sources of Improvisations :A case Study from a Developing Country Context" <i>Journal of Global Information Technology Management</i> vol7 n <sup>3</sup>	*
15	Alvarez R. (2001) "Face-work and the discursive construction of technology during information systems development" <i>Information technology and People</i> vol 14 n <sup>4</sup>	*
16	Robey D., Holmström J. (2001) "Transforming Municipal Governance in Global Context: A case Study of the Dialectics of Social Change" <i>Journal of Global Information technology Management</i> vol4 n <sup>4</sup>	
17	Starker S.S., Valacich J.S., S. Sarker (2003) "Virtual team Trust :Instrument Development and Validation in an IS Educational Environment" <i>Information Resources Management Journal</i> vol 16 n <sup>2</sup>	
18	Wu F., Mahajan V., Balasubramanian S. (2003) "An Analysis of E-Business Adoption and Its Impact on Business Performance" <i>Academy of Marketing Science</i>	

Journal vol 31 n<sup>4</sup>

19 Cannon A.R., Woszczyński A.B.(2002) "Crises and Revolutions in Information Technology :Lessons learned from Y2K " *Industrial Management and Data Systems* 102, 5/6

20 Gefen D. (2004) "What Makes an ERP Implementation Relationship Worthwhile: Linking Trust Mechanisms and ERP Usefulness" *Journal of Management Information Systems*. Vol.21, Iss. 1; pg. 263

21 Pavlou P.A., Gefen D. (2004) "Building Effective Online Marketplaces with Institution-Based Trust", *Information Systems Research*. Vol.15, Iss. 1; pg. 37, 23 pgs

22 Caidi, N. (2004) "National Information Infrastructures in Central and Eastern Europe: Perspectives from the Library Community" *The Information Society*.Vol.20, Iss. 1; pg. 25

23 Marres N. (2004) "Tracing the trajectories of issues, and their democratic deficits, on the Web: The case of the Development Gateway and its doubles" . *Information Technology & People*, Vol 17, Iss. 2; pg. 124

24 Smith K., Dickhaut J. (2005) "Economics and emotion: Institutions matter" . *Games and Economic Behavior*. Vol.52, Iss. 2; pg. 316

25 Chae B. Poole S.M. (2005) "The surface of emergence in systems development: agency, institutions, and large-scale information systems" . *European Journal of Information Systems*. Vol.14, Iss. 1; pg. 19 \*

26 Liang H., Laosethakul K., Lloyd S.J., YajiongXue Y. (2005). "Information Systems and Health Care-I: Trust, Uncertainty, and Online Prescription Filling" *Communications of the Association for Information Systems*. Vol.15 pg. 1

27 Reimers K., Li M. (2005). « Antecedents of a Transaction Cost Theory of Vertical IS Standardization Processes" *Electronic Markets* Nov 1, 2005. Vol.15, Iss. 4; pg. 301

28 Chang C., Jarvenpaa. S. (2005) "Pace of Information Systems Standards Development and Implementation: The Case of XBRL" *Electronic Markets*. Vol.15, Iss. 4; pg. 365

29 Cegarra-Navarro J.G., Sabater-Sánchez R. (2005) "E-learning: organizational requirements for successful feedback learning" *Journal of Workplace Learning*. Vol.17, Iss. 5/6; pg. 276, 15 pgs

30 Fomin V.V., King J.L, Lyytinen K.J., McGann S.T. (2005). "Diffusion and Impacts of E-Commerce in the United States of America: Results from an Industry Survey" *Communications of the Association for Information Systems*. Vol.16 pg. 1

31 Hahn C, Fley B., Florian M. (2006) Self-regulation through social institutions: A framework for the design of open agent-based electronic marketplaces. *Computational and Mathematical Organization Theory*. Vol.12, Iss. 2-3; pg. 181

32 Hu Q., Huang C.D.(2006) "The rise and fall of the competitive local exchange carriers in the U.S.: An institutional perspective". *Information Systems Frontiers*. Vol.8, Iss. 3; pg. 225

33 Chae B., Lanzara G.F. (2006) "Self-destructive dynamics in large-scale technochange and some ways of counteracting it". *Information Technology & People*. Vol.19, Iss. 1; pg. 74, 24 pgs

34 Thatcher J.B., Brower R.S., Mason R.M. (2006) "Organizational Fields and the Diffusion of Information Technologies Within and Across the Nonprofit and Public Sectors" *American Review of Public Administration*. Vol.36, Iss. 4; pg. 437

35 Verhagen T., Meents S., Tan Y.-H. (2006) "Perceived risk and trust associated with purchasing at electronic marketplaces". *European Journal of Information Systems*. Vol.15, Iss. 6; pg. 542, 14 pgs

36 Tsamenyi M., Cullen J., González J.M. (2006) "Changes in accounting and financial information system in a Spanish electricity company: A new institutional theory analysis" *Management Accounting Research*. Vol.17, Iss. 4; pg. 409

37 Salmeron J.L., Bueno S. (2006) "An information technologies and information systems industry-based classification in small and medium-sized enterprises: An institutional view" *European Journal of Operational Research*. Vol.173, Iss. 3; pg. 1012

- 38 Dinev T., Bellotto M., Hart P., Russo V. (2006) "Privacy calculus model in e-commerce - a study of Italy and the United States" *European Journal of Information Systems*. Vol.15, Iss. 4; pg. 389
- 39 Firth D.R., Lawrence C. (2006) "An institutional perspective on customer relationship management" . *JITTA :Journal of Information Technology Theory and Application*. Vol.8, Iss. 1; pg. 21, 11 pgs \*
- 40 de Vaujany F.X. (2006) "Between Eternity and Actualization: The Difficult Co-Evolution of Fields of Communication in the Vatican" *Communications of the Association for Information Systems*. Vol.18 pg.
- 41 Anonymous (2006) "Implementing Section 404 of the Sarbanes Oxley Act: Recommendations for Information Systems Organizations" *Communications of the Association for Information Systems*. Vol.18 pg. 5
- 42 Benders J., Batenburg R., van der Blonk H.(2006) "Sticking to standards; technical and other isomorphic pressures in deploying ERP systems". *Information & Management*. Vol.43, Iss. 2; pg. 194
- 43 Piotti B., Chilundo B., Sahay S. (2006) "An Institutional Perspective on Health Sector Reforms and the Process of Reframing Health Information Systems: Case Study From Mozambique" . *The Journal of Applied Behavioral Science*. Vol.42, Iss. 1; pg. 91, 19 pgs
- 44 Miranda S.M., Kim Y-M (2006) "Professional versus Political Contexts : Institutional Mitigation and the Transaction Cost Heuristic in Information Systems Outsourcing" *MIS Quarterly* vol30(3) \*
- 45 Backhouse J., Hsu C.W. Silva L. (2006) "Circuits of power in creating De Jure Standards: shaping an International Information Systems Security Standards" *MIS Quarterly* vol30 August \*
- 46 Lukka K. (2007) "Management accounting change and stability: Loosely coupled rules and routines in action" *Management Accounting Research*. Vol.18, Iss. 1; pg. 76
- 47 Choudrie I., Papazafeiropoulou A. (2007) "Assessing the UK policies for broadband adoption" . *Information Systems Frontiers*. Vol.9, Iss. 2-3; pg. 297, 12 pgs
- 48 Miscione G. (2007) "Telemedicine in the Upper Amazon :Interplay with Local Health Care Practices" *MIS Quarterly* vol31 n<sup>2</sup> p.403-425
- 49 Liang H., Saraf N., Hu Q., Xue Y. (2007) "Assimilation of Enterprise Systems : the effect of Institutional Pressures and the Mediating Role of Top Management " *MIS Quarterly* vol31 n<sup>1</sup> \*
- 50 Philippidou P., S. Karageorgiou, Tarantilis M., C.Soderquist, E.,Prastacos, G. (2008) Meting the challenge of Technology Driven Change within an Institutional Context : the Greek Case. *Public Administration*; June, Vol. 86 Issue 2, p429-442, 14p
- 51 Bunduchi, R. Graham, I., Smart, A., Williams, R. (2008) Homogeneity and heterogeneity in information technology private standard settings - the institutional account. *Technology Analysis & Strategic Management*, July, Vol. 20 Issue 4, p389-407, 19p
- 52 Ugrin, J. (2009) The Effect of System Characteristics, Stage of Adoption, and Experience on Institutional Explanations for ERP Systems Choice. *Accounting Horizons*; Dec, Vol. 23 Issue 4, p365-389, 25p
- 53 Haines, M.N. (2009) Understanding Enterprise System Customization: An Exploration of Implementation Realities and the Key Influence Factors *Information Systems Management*, Spring, Vol. 26 Issue 2, p182-198, 17p
- 54 Lowry, P. B., Vance, A., Moody, G., Beckman, B.Read, A. (2008) Explaining and Predicting the Impact of Branding Alliances and Web Site Quality on Initial Consumer Trust of E-Commerce Web Sites. *Journal of Management Information Systems*; Spring, Vol. 24 Issue 4, p199-224, 26p
- 55 Riemenschneider, C.K. Jones, K., Leonard, L.N. K. (2009) Web Trust Moderator of the Web's perceived Individual Impact *Journal of Computer Information Systems*; Summer, Vol. 49 Issue 4, p10-18, 9p



- Sahay, S., Aanestad, M., Monteiro, E. (2009) Configurable Politics and Asymmetric Integration: Health e-Infrastructures in India. *Journal of the Association for Information Systems*; May, Vol. 10 Issue 5, p399-414, 16p
- 56 Alvarez, R.(2008) Examining technology, structure and identity during an Enterprise System implementation. *Information Systems Journal*; Mar, Vol. 18 Issue 2, p203-224, 22p
- 57 Kim, G., Shin, B., Lee, H.G. (2009) Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal*; May, Vol. 19 Issue 3, p283-311, 29p
- 58 Wang, W., Benbasat, I. (2008) Attributions of Trust in Decision Support Technologies: A Study of Recommendation Agents for E-Commerce *Journal of Management Information Systems*; Spring, Vol. 24 Issue 4, p249-273, 25p
- 59 Ribes, D., Finholt, T. A (2009) The Long Now of Technology Infrastructure: Articulating Tensions in Development. *Journal of the Association for Information Systems*; May, Vol. 10 Issue 5, p375-398, 24p
- 60 Sia, C. L., Lim, K. H. , Leung, K., Lee, M. K.O. , Huang, W. Wei, Benbasat, I. (2009) Strategies to Promote Internet Shopping : Is Cultural Customization needed? *MIS Quarterly*; Sep, Vol. 33 Issue 3, p491-512, 22p
- 61 Sims, J., Vidgen, R., Powell, P. (2008) E-Learning and the Digital Divide: Perpetuating Cultural and Socio-Economic Elitism in Higher Education. *Communications of AIS*, Vol. 2008 Issue 22, p429-442, 14p
- 62 Srivastava, S., Teo, T. S. H.' Subramanian, A.M.' (2009) Rational versus Institutional Perspectives in Organizational Web Sites. *Communications of AIS*, Vol. 2009 Issue 24, p615-638, 24p
- 63 Jyh-Jeng W., Tsang, A. S. L.(2008) Factors affecting members' trust belief and behaviour intention in virtual communities. *Behaviour & Information Technology*; Mar/Apr, Vol. 27 Issue 2, p115-125, 11p
- 64 Mithas, S., Krishnan, M. S. (2008) Human Capital and Institutional Effects in the Compensation of Information Technology Professionals in the United States. *Management Science*; Mar, Vol. 54 Issue 3, p415-428, 14p
- 65 Hess, T., Fuller, M., Campbell, D. (2009) Designing Interfaces with Social Presence: Using Vividness and Extraversion to Create Social Recommendation Agents. *Journal of the Association for Information Systems*; Dec, Vol. 10 Issue 12, p889-919, 31p
- 66 Shi, W., Shambare, N., Wang, J. (2008) The adoption of internet banking: An institutional theory perspective. *Journal of Financial Services Marketing*; Mar, Vol. 12 Issue 4, p272-286, 15p
- 67 KIM, D.J. (2008) Self-Perception-Based Versus Transference-Based Trust Determinants in Computer-Mediated Transactions: A Cross-Cultural Comparison Study. *Journal of Management Information Systems*; Spring, Vol. 24 Issue 4, p13-45, 33p
- 68 Robey, D., Ghiyoung, I., Wareham, J. D (2008) Theoretical Foundations of Empirical Research on Interorganizational Systems: Assessing Past Contributions and Guiding Future Directions. *Journal of the Association for Information Systems*; Sep, Vol. 9 Issue 9, p497-518, 23p
- 69 Dibbern, J., Winkler, J., Heinzl, A. (2008) Explaining variations in Client Extra Costs Between Software Projects Offshored to India, *MIS Quarterly*; Jun, Vol. 32 Issue 2, p333-366, 34p
- 70 Garzarelli, G., Limam, Y. R., Thomassen, B. (2008) Open source software and economic growth: A classical division of labor perspective. *Information Technology for Development*; Vol. 14 Issue 2, p116-135, 20p
- 71 Zahedi, F.M., Song J. (2008) Dynamics of Trust Revision: Using Health Infomediaries. *Journal of Management Information Systems*; Spring, Vol. 24 Issue 4, p225-248, 24p
- 72 Huang, Z., Janz, B. D., Frolick, M.N. (2008) A Comprehensive Examination of Internet-EDI Adoption. *Information Systems Management*; Summer, Vol. 25 Issue 3, p273-286, 14p
- 73

74 Komiak, S. Y. X., Benbasat, I. (2008) A Two-Process View of Trust and Distrust Building in Recommendation Agents: A Process-Tracing Study. *Journal of the Association for Information Systems*; Dec, Vol. 9 Issue 12, p727-747, 22p

75 Teo, T. H., Srivastava, S. C., Jiang, L. (2008) Trust and Electronic Government Success: An Empirical Study. *Journal of Management Information Systems*; Winter, Vol. 25 Issue 3, p99-131, 33p

76 Susarla, A., Barua, A., Whinston, A. B. (2009) A Transaction Cost Perspective of the "Software as a Service" Business Model. *Journal of Management Information Systems*; Fall, Vol. 26 Issue 2, p205-240, 36p

77 Mithas, S., Jones, J. L., Mitchell, W. (2008) Buyer Intention to Use Internet Enabled Reverse Auctions : The Role of Asset Specificity, Product, Specialization, and Non-Contractibility. *MIS Quarterly*; Dec, Vol. 32 Issue 4, p705-724, 20p

78 Treiblmaier, H., Strebing, A. (2008) The effect of e-commerce on the integration of IT structure and brand architecture. *Information Systems Journal*; Sep, Vol. 18 Issue 5, p479-498, 20p

79 Rangan, S., Sengul, M. (2009) Information technology and transnational integration: Theory and evidence on the evolution of the modern multinational enterprise. *Journal of International Business Studies*; Dec, Vol. 40 Issue 9, p1496-1514, 19p

80 Thouin, M.F., Hoffman, J.J., Ford, E. W. (2009) IT outsourcing and firm-level performance: A transaction cost perspective. *Information & Management*; Dec, Vol. 46 Issue 8, p463-469, 7p

81 Shutao D., Sean X. X., Kevin X. Z. (2009) Information Technology in Supply Chains: The Value of IT-Enabled Resources Under Competition. *Information Systems Research*; Mar, Vol. 20 Issue 1, p18-32, 15p

82 Dedrick, J., Xu, Sean X., Zhu, K.X. (2008) How Does Information Technology Shape Supply-Chain Structure? Evidence on the Number of Suppliers. *Journal of Management Information Systems*; Fall, Vol. 25 Issue 2, p41-72, 32p

83 Diana, M. L. Exploring information systems outsourcing in U.S. hospital-based health care delivery systems. *Health Care Management Science*; Dec2009, Vol. 12 Issue 4, p434-450, 17p

84 Madon, S., Reinhard, N.,Roode, D., Walsham, G. (2009) Digital inclusion projects in developing countries: Processes of institutionalization. *Information Technology for Development*; Vol. 15 Issue 2, p95-107, 13p

85 Ravichandran, T., Shu H., Hasan, I. (2009) Effects of Institutional Pressures on Information Technology Investments: An Empirical Investigation. *IEEE Transactions on Engineering Management*; Nov, Vol. 56 Issue 4, p677-691, 15p

86 Mangan, A., Kelly, S. (2009) Information systems and the allure of organisational integration: a cautionary tale from the Irish financial services sector. *European Journal of Information Systems*; Feb, Vol. 18 Issue 1, p66-78, 13p

87 Braganza, A., Hackney, R. (2008) Diffusing Management Information for Legal Compliance: The Role of the IS Organization Within the Sarbanes-Oxley Act. *Journal of Organizational & End User Computing*; Apr-Jun, Vol. 20 Issue 2, p1-24, 24p

88 Lyytinen K., Newman M., Al-muharfi A. (2009) A Institutionalizing enterprise resource planning in the Saudi steel industry: A punctuated socio-technical analysis. *Journal of Information Technology: Special Issue on Institutional Theory in Information*, London, Dec, Vol. 24, Iss. 4 p. 286-304 (19 pp.)

89 Guerra N., Hayes N., Rajão L. (2009) Conceptions of control and IT artefacts: an institutional account of the Amazon rainforest monitoring system. *Journal of Information Technology: Special Issue on Institutional Theory in Information* London:Dec . Vol. 24, Iss. 4, p. 320-331 (12 pp.)

90 Blegind Jensen T., Kjærgaard A., Svejvig P. (2009) Using institutional theory with sensemaking theory: a case study of information system implementation in healthcare. *Journal of Information Technology: Special Issue on Institutional Theory in Information* London:Dec. Vol. 24, Iss. 4, p. 343-353 (11 pp.)

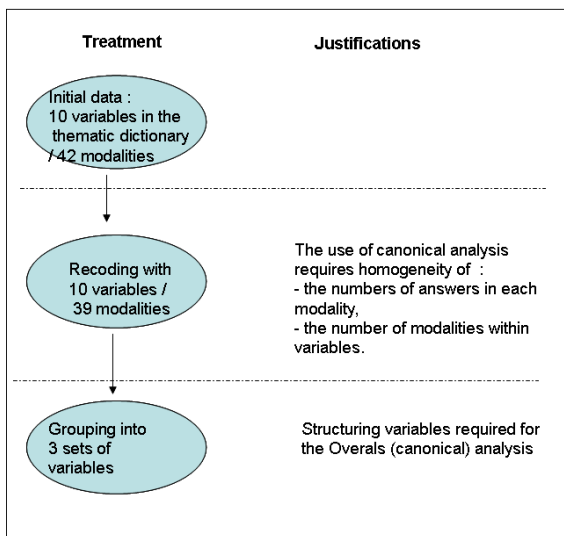
- Jeyaraj A., Balser D. B, Chowa C., Griggs G. M. (2009) Organizational and institutional determinants of B2C adoption under shifting environments. *Journal of Information Technology*. London:Sep. Vol. 24, Iss. 3, p. 219-230 (12 pp.)
- 91 Chiang L.C., Liao C. (2009) The influence of digital standardization on administrative efficiency in e-government: A view of standards development organizations *Systems Research and Behavioral Science*. Chichester:Jul/Aug. Vol. 26, Iss. 4, p. 455
- 92 Srivastava S. C., Teo T.S.H (2009) Citizen Trust Development for E-Government Adoption and Usage: Insights from Young Adults in Singapore. *Communications of the Association for Information Systems*. Atlanta. Vol. 25, Iss. 1, p. 20
- 93 Rowlands B. (2009) A social actor understanding of the institutional structures at play in information systems development. *Information Technology & People*. West Linn, Vol.22, Iss. 1, p. 51-62
- 94 Basaglia S., Caporarello L., Magni M., Pennarola F. (2009) Environmental and organizational drivers influencing the adoption of VoIP. *Information Systems and eBusiness Management*. Heidelberg:Jan. Vol. 7, Iss. 1, p. 103-118 (16 pp.)
- 95 Han K., Kauffman R.J, Nault B. R.(2008) Relative importance, specific investment and ownership in interorganizational systems. *Information Technology and Management*. Bussum:Sep. Vol. 9, Iss. 3, p. 181-200 (20 pp.)
- 96 Martinsons M.G. (2008) Relationship-based e-commerce: theory and evidence from China *Information Systems Journal*. Oxford:Jul. Vol. 18, Iss. 4, p. 331-356
- 97 Mekonnen S.M., Sahay S. (2008) An institutional analysis on the dynamics of the interaction between standardizing and scaling processes: a case study from Ethiopia. *European Journal of Information Systems*. Basingstoke:Jun. Vol. 17, Iss. 3, p. 279-289 (11 pp.)
- 98 Hayes N. (2008) Institutionalizing change in a high-technology optronics company: The role of information and communication technologies *Human Relations*. New York:Feb. Vol. 61, Iss. 2, p. 243
- 99 Ravichandran T., Han S., Hasan I (2009) Effects of Institutional Pressures on Information Technology Investments: An Empirical Investigation. *IEEE Transactions on Engineering Management*. New York: Nov. Vol. 56, Iss. 4; p. 677
- 100 Zhang C., Dhaliwal J. (2009) An investigation of resource-based and institutional theoretic factors in technology adoption for operations and supply chain management *International Journal of Production Economics*. Amsterdam: Jul. Vol. 120, Iss. 1; p. 252
- 101 Rizzi C., Ponte D., Bonifacio M. (2009) A new institutional reading of knowledge management technology adoption, *Journal of Knowledge Management*. Kempston: Vol. 13, Iss. 4; p. 75
- 102 Liu B., Tang N., Zhu X. (2008) Transferring technology across borders: institutional effects in Chinese context, *Journal of Technology Transfer*. Indianapolis: Dec. Vol. 33, Iss. 6; p. 619 (12 pages)
- 103 Bunduchi R., Graham I. , Smart A., Williams R. (2008) Homogeneity and heterogeneity in information technology private standard settings - the institutional account, *Technology Analysis & Strategic Management*. Abingdon: Jul. Vol. 20, Iss. 4; p. 389
- 104 Baptista J. (2009) Institutionalisation as a process of interplay between technology and its organisational context of use *Journal of Information Technology*, 24, 305–319
- 105 Nicholson B., Sahay S. (2009) Deinstitutionalization in the context of software exports policymaking in Costa Rica *Journal of Information Technology*, 24, 332–342
- 106 Lorence D.P (2008) Outsourcing Services in Partial Digital Environments: Assessing Management Preferences Where Paper is king, *The Journal of Computer Information Systems*. Stillwater: Spring. Vol. 48, Iss. 3, p. 103-110 (8 pp.)
- 107

## APPENDIX 2: Cluster analysis and recoding modalities

## 2.1. Canonical and cluster analysis

Any particular variable contributes to the results only inasmuch as it provides information that is independent of the other variables in the same set. Moreover, it enables cluster analysis on initial variables that are heterogeneous (nominal versus continuous scales) and that are numerous (this is not the case for the correspondence analysis). When variables can be considered as grouped into sets, nonlinear generalized canonical analysis is an appropriate analysis technique (Biejlveld et al., 1999). The objective of such an analysis is the search for structuring elements in initial data (i.e. search for 'dimensions' that structure data).

## 2.2 Modifications to initial data to allow performance of canonical and cluster analyses



### **2.3 Presentation of the recoding process before Overals analysis (10 variables, 39 modalities)**

	<b>VARIABLES</b>	<b>MODALITIES</b>	<b>RECODED MODALITIES</b>
1	Methodological approaches	Action-research, survey, case study, experiment, meta-analysis (i.e. analysis of a set of previous empirical research), hybrid approach (combinations)	Case study (1), Survey (2), Experimentations (3), Other Methods (Hybrid and meta analysis (4)
2	Level of analysis	Societal, inter-organisational, intra-organisational	Cross-organisational (1), Intra-organisational (2), Societal (3)
3	Period of publication		Year 1999, Year 2000, Year 2001, Year 2002, Year 2003, Year 2004, Year 2005, Year 2006, Year 2007, Year 2008, Year 2009
4	Target	Specific technical concept, specific information technologies, or information systems as a whole	Technical concept (1), IS in general (2)
5	Nature of data collection	Short or longitudinal case study	Cross-sectional (1), Longitudinal (2)
6	Nature of data processing	-First generation of quantitative techniques: simple or multiple linear regressions, descriptive tests - Second generation of quantitative techniques: structural equation modeling (like LISREL or PLS), factorial analysis, dependency network diagrams, logistical regression, game theory techniques... - Unstructured qualitative methods (no coding and thematic dictionary was mentioned) - Structured qualitative methods (with a coding and treatment of the coding)	Quali non structured (unstructured qualitative methods) (1) Quali structured (Structured qualitative methods) (2) Quanti first Gen (First generation quantitative methods) (3) Quanti second Gen (Second generation quantitative methods) (4)
7	International	Yes or no	No, Yes

	comparison		
8	Sectorial approach	Intra-administration industry, intra-manufacturing industry, intra-agricultural industry, intra-service industry, cross-sector	Cross-sectorial (1), Intra-sectorial (2)
9	Theoretical framework implemented	Mainly or partly institutional, mainly or partly neo-institutional in the field of sociology, mainly or partly institutional in the field of economics, mixed or with an implicit positioning	MARG Neo Eco (Partly neo institutional economics) (1) MARG Neo Socio (Partly neo institutional sociology) (2) MAIN Neo Eco (Mainly neo institutional economics) (3) MAIN Neo socio (Mainly neo institutional sociology) (4) OTHERS (other institutional frameworks) (5) COMB (Combined weak references of institutional frameworks) (6)
10	Types of publications	Management, IS management or others	Management Journals (1), IS Journals (2), Other Journals (3)

For example, the following modalities (intra-administration industry, intra-manufacturing industry, intra-agricultural industry and intra-service industry) were recoded into one modality for the variable “sectorial approach”. This resulted in two modalities: intra-sectorial or cross-sectorial.

### APPENDIX 3: Descriptive analysis of thematic coding applied to journal articles

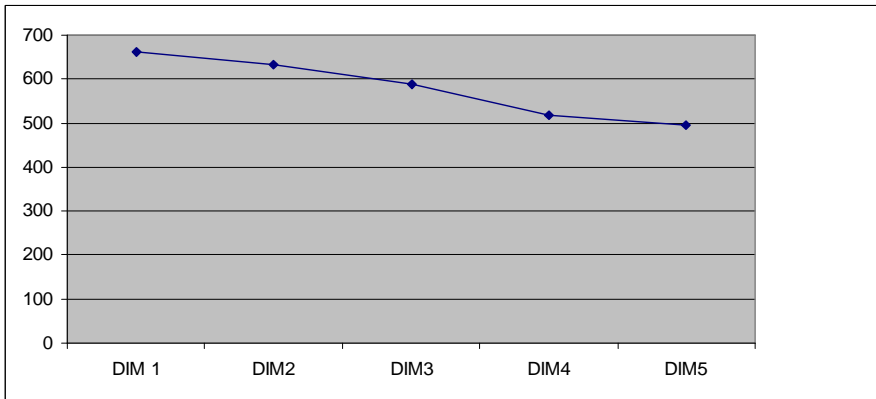
Related variables	Modalities	Frequencies for the article database (ABI and EBSCO)	Percentage (%)
Methodological approaches	Case study	44	41.1
	Survey	45	42.1
	Experimentation	5	4.7
	Other Methods (Meta analysis, Action Research, Hybrid)	13	12.1
	Total	107	100.0
Level of analysis	Cross-Organisational (Inter-organizational perspectives)	47	43.9
	Intra-organisational (Intra-organizational perspectives)	36	33.6
	Societal (Societal perspectives)	24	22.4
	Total	107	100.0
Target	Technical Concept	47	43.9
	IS in General	60	56.1
	Total	107	100.0
Nature of data collection	Cross sectional	54	50.5
	Longitudinal	53	49.5
	Total	107	100.0
Nature of data processing	Quali non Structured (Unstructured qualitative research)	25	23.4
	Quali Structured (Structured qualitative research)	24	22.4
	Quanti first Gen (First generation quantitative research)	32	29.9
	Quanti Second Gen (Second generation quantitative research)	26	24.3
	Total	107	100.0
International comparison	No (Monocultural)	54	50.5
	Yes (Intercultural)	53	49.5
	Total	107	100.0
Sector approach	Cross-sectorial	54	50.5
	Intra-sectorial	53	49.5
	Total	107	100.0
Theoretical framework implemented	MARG Neo Eco (Partly new institutional economics)	8	7.5
	MARG neo socio (Partly new institutionalism sociology)	16	15.0
	MAIN neo eco (Mainly new institutionalism economics)	8	7.5
	MAIN neo socio (Mainly new institutionalism sociology)	33	30.8
	OTHERS (Institutional, others)	25	23.4

	COMB (combined theoretical frameworks :one is institutional)	17	15.9
	Total	107	100.0
Type of journal	Other journals	23	21.5
	Management journals (Journals in management)	49	45.8
	IS journals (Journals in MIS)	35	32.7
	Total	107	100.0
Period of publication	Year 1999	2	1.9
	Year 2000	2	1.9
	Year 2001	5	4.7
	Year 2002	4	3.7
	Year 2003	5	4.7
	Year 2004	5	4.7
	Year 2005	7	6.5
	Year 2006	14	13.1
	Year 2007	5	4.7
		Year 2008	28
	Year 2009	30	28.0
	Total	107	100.0



## APPENDIX 4:Overals analysis and Cluster analysis

### 4.1. Choice of numbers of dimensions: Scree Test: 2 dimensions (Overals analysis)



### 4.2. Overals (canonical) analysis results with 2 dimensions

		Dimension		Sum
		1	2	
Loss	Set 1	.190	.482	.672
	Set 2	.499	.284	.783
	Set 3	.326	.333	.659
	Average	.338	.366	.705
Eigen Value		.662	.634	
Fit				1.295

Percentage of restituted variances: Fit / number of dimensions:  $1.295/2=64.7\%$

### 4.3. Identification and validation of our groups by cluster analysis

A cluster analysis of the coordinates by means of the Kmeans method resulted in three groups (see Appendix 5).

Validation of the cluster analysis was carried out by means of two tests.

An ANOVA (F test) shows that the three groups were significantly different on the two dimensions (sig 0.000).

**ANOVA**

	Cluster		Error		F	Significance
	Mean square	ddl	Mean square	Ddl		
DIM1	6.319	2	.215	36	29.326	.000
DIM2	5.868	2	.165	36	35.641	.000

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Additionally, a discriminant analysis of the coordinate validated the three group classifications, with a classification index of 97%.

**Classification results**

	Cluster number of case	Predicted group membership			Total
		1	2	3	
Original Numbers	1	7	0	0	7
	2	0	21	1	22
	3	0	0	10	10
%	1	100.0	.0	.0	100.0
	2	.0	95.5	4.5	100.0
	3	.0	.0	100.0	100.0

a. 97.4% of original grouped cases correctly classified

Lastly, the table below shows relative homogeneity in the distribution of modalities within these three groups (clusters).

Cluster	1	7.000
	2	22.000
	3	10.000
Valid		39.000
Missing		.000

## APPENDIX 5: Coordinates of modalities and their location on the map (Kmeans method)

