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Interpreting IS alignment: A multiple case study in professional organizations

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Abstract

This paper centers on the interpretation attributed by organizational members to the information systems (IS) alignment concept. Its objective is to study IS alignment in professional organizations. Specifically, it reports on an interpretive study conducted in five Chilean organizations; four professional and one entrepreneurial, of which two are private and three are public. The theoretical background of our study is derived from three IS strategic alignment conceptualizations: *managerial, emergent and critical*. These concepts formed our theoretical framework that guided data collection and analysis. The study centers on the meanings organizational members assigned to IS strategic alignment, as well as their views on the barriers that hinder achieving this level of organizational integration. The analysis results are summarized in seven hermeneutic themes that point out the different connotations the organizations assigned to IS alignment. The significance of the findings are summarized in four insights that formulate theoretical and practical implications. These insights refer to: (1) the difficulties of achieving alignment for professional organizations, particularly public ones, (2) the limitations these organizations have in being agile, (3) the rationale for acquiring technology and determining IT skills, and (4) the imperative meaning that CIOs attribute to IS alignment. The paper concludes with a reflection on the limitations and relevance of the research.

Keywords: Information systems strategic alignment; Strategy; Developing countries; Critique; Latin America; Chile; Professional organizations; Public organizations; Interpretive studies; Managerial; Emergent; Critical theory; Critical studies; Professional and entrepreneurial organizations

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1. Introduction

The conformity or fit between IS and business strategy, also known as IS strategic alignment (Henderson & Venkatraman, 1999; Jarvenpaa & Ives, 1993; Luftman & Brier, 1999), has been a subject of study and interest not only for IS researchers but also for practitioners; hence the numerous alignment studies in our field.[1] For executives interested in obtaining value out of their information technology (IT) investments, alignment is perceived as critical (Palmer & Markus, 2000; Rockart, Earl, & Ross, 1996). Interest in IS alignment is also stimulated by well known cases of organizations that have successfully aligned their IS to gain competitive advantage (Applegate, McFarlan, & McKenney, 1999). Moreover, there is the belief that alignment can result in enhanced organizational performance (Sabherwal & Chan, 2001). Hence the concept of IS alignment has been of obvious interest in our field. As a result, researchers – particularly those in the positivist research tradition – have addressed questions dealing with the most suitable alignment model for organizations (Henderson & Venkatraman, 1999; Sabherwal, Hirschheim, & Goles, 2001) as well as the factors that enable or inhibit alignment (Luftman, Papp, & Brier, 1999; Reich & Benbasat, 2000).

According to Henderson and Venkatraman (1999) alignment is a desired state for most organizations investing in IT that is not always achieved, as it often entails a radical change in the way managers consider information technology. Consequently, an organization seeking IS alignment must undergo an intense communication process whereby the strategic goals of the organization and those of IT are shared with organizational members (Reich & Benbasat, 2000). In this paper, our objective is to grasp the meaning organizational members assign to IS strategic alignment as well as the rationale they attribute to alignment hindrances. Making sense of these meanings may help researchers and managers understand attitudes and actions related to IS alignment. To achieve our objective we conducted our study in the context of Latin America. Instead of concentrating on large billionaire organizations, as much of the IS literature has done (Hirschheim & Sabherwal, 2001; Reich & Benbasat, 2000), we decided to focus on professional organizations.

Professional organizations have as their final aim not to make profit but to serve the public and support the objectives of their professional members (Mintzberg, 1994). Typical examples of this type of organization are hospitals and universities. Given their structures and non-profit nature, professional organizations offer particular challenges in relation to strategic management (Mintzberg, 1994). In this sense, Ring and Perry (1985) have argued that models developed in for-profit organizations will not work in organizations whose purpose is not making or increasing earnings. Hence the motivation of our research: to inquire about the meanings members of professional organizations would assign to IS strategic alignment. We believe that an interpretive study of this nature will contribute to the IS strategic alignment body of knowledge by expanding its empiric content to professional organizations and by formulating new theoretical insights.

[1] A bibliographic search in Academic Search Premier and Business Source Premier on the keyword strategic alignment reported 148 research papers.

The paper is organized into five main sections. Following this introduction, we present our theoretical framework in Section 2. Specifically, we include three strategic alignment conceptualizations found within the literature: managerial, emergent and critical. The next section describes in detail our research approach for interpretive studies: explaining the particular rationale for the selection of the sites, data gathering and analysis techniques. The results of our interpretations are presented in Section 4 in the form of themes. Section 5 expounds the implications of our findings through the formulation of insights. The paper concludes with a discussion of the limitations, as well as the scope of our findings.

2. Theoretical assumptions

We found three different IS alignment conceptions in the literature and will draw on these to set the theoretical background upon which we conducted our study (Table 2 summarizes these three positions in terms of their main premises, literature and how they influenced our research). The first conception, which we call *managerial*, consists of deeming IS strategic alignment in terms of an ideal model to which managers should strive to achieve (see for example Henderson & Venkatraman, 1999). This managerial conception views IS alignment as a means for firms to increase their profitability. A second viewpoint of IS alignment sees this phenomenon as *emergent* (see for example Ciborra, 1997). From this perspective IS alignment cannot occur as an automatic response to senior management plans and commands. Thus, in comparing the emergent and managerial views, we see they differ in how they perceive the origin of IS alignment, the latter deems it top down while the former bottom up. However, they keep the aim of alignment – as increasing profitability and efficiency – unquestioned. By contrast, the essence of the third view, which we call *critical*, considers alignment as a hegemonic discourse aimed at perpetuating the dominant ideology of capitalism (see for example Levy, Alvesson, & Willmott, 2003). The rest of this section discusses in more detail those three positions.

2.1. The managerial perspective

The managerial perspective of IS strategic alignment is epitomized in the works of Henderson and Venkatraman (1999). The virtues of this proposal are the clarity of its constructs, and that it has been validated in numerous IS alignment studies (see Table 1). For Henderson and Venkatraman, IS alignment occurs at four different domains. The first and second domain are derived from the information systems architecture. These are, respectively, *the portfolio of applications* and *the configuration of hardware*. The third is information systems *processes*. This domain refers to information technology administration and management; that is, the processes that define IT operations. It relates to modalities adopted by the IS function to develop, maintain and control systems and infrastructure. The fourth domain is information systems *skills*. This concerns the acquisition of knowledge and training, and the continuous knowledge development and capabilities required to manage and operate the information technology structure. Henderson and Venkatraman, although clear in the details of the alignment domain, do not discuss implementation. They simply suggest that implementation will require a radical change in thinking on managers' behalf. In summary, this model proposes that for IS strategic alignment to occur, the organization's overall strategic objectives should be in harmony with these three domains of IS activities.

Table 1
Managerial view of IS alignment domains

Concept	Related research	Critical
Henderson and Venkatraman framework for IS alignment		
Applications (software and portfolio of applications, data bases)	Bergeron and Raymond (1991), Earl and Feeney (1997), Jarvenpaa and Ives (1993), King and Teo (1996), Lederer and Sethi (1988), Lederer and Mendelow (1988), Palmer and Markus (2000), Sabherwal and Chan (2001), Sambamurthy and Zmud (1999)	How the applications, systems and computer programs are linked to strategic alignment initiatives or radical change
Hardware (hardware configurations, networking, communication technology, technical infrastructure)	Jarvenpaa and Ives (1993), Kettinger et al. (1994), Lawless and Price (1992), Luftman (2000), Rockart et al. (1996), Sambamurthy and Zmud (1999), Teo and King (1996)	The rationale behind the current IT infrastructure; the infrastructure itself; the design and its architecture
IS processes (work processes related to the operations of the IS)	Applegate and Elam (1992), King and Teo (1996), Reich and Benbasat (2000), Sambamurthy and Zmud (1999), Segars et al. (1998)	The rationale and procedures for conceiving and authorizing new IS projects. The administrative processes to request and deliver IS services. The criteria to prioritize new systems and IT services
Skills (the acquisition of training, knowledge for managing and operating IS)	Applegate and Elam (1992), Hirschheim and Sabherwal (2001), Lederer and Mendelow (1988), Luftman (2000), Reich and Benbasat (2000)	The technical skills and knowledge of the current IT personnel. The rationale and criteria for hiring and training new personnel; the promotion and incentive systems

2.2. The emergent perspective

The emergent position is clearly typified in the works of Ciborra (see also Ciborra, 2000; Ciborra, 2002; Monteiro, 2000) who traces the IS strategic alignment concept back to Henderson and Venkatraman's (1992) article and a study by Broadbent and Weill (1993) in an Australian Bank. According to Ciborra, in the early 1990s IS researchers interested in strategy were concerned with how to evaluate and measure strategic alignment. The quest for such measurements was promoted by an IBM sponsored research project that stopped in 1995, mainly, Ciborra claims, due to the elusiveness of articulating such evaluative measures. The problem with normative models, such as those proposed by the IBM pundits, Ciborra says, is the consideration of technology as neutral and docile; hence he proposes a new set of metaphors for capturing the elusive nature of IS alignment:

> At the extreme, technology could be regarded as an actor in itself. Alignment as strategic alliance between humans and nonhumans (Latour, 1993) may be a better expression to portray the quest of a common, interplay space between them. Armed with such broader understanding, strategies of care, hospitality and cultivation

> would then make much more practical sense for management, than a sheer, commando-like "harnessing-IT" strategy (Ciborra, 1997, p. 69).

Moreover, Ciborra criticizes the model proposed by Henderson and Venkatraman for not considering implementation, and calls it an *unrealistic abstraction*. As an alternative, Ciborra proposes that actual alignment is carried out by managers acting with *care*, which means that managers can integrate IT use to organizational tasks through encouraging improvisations and by paying attention to specific practices. He also introduces the concept of *cultivation* for understanding strategic alignment. Cultivation is the relationship between current and future strategies and consists in the accumulation of technology for covering future needs (Itami & Numagami, 1992). Ciborra illustrates this concept by the story of Toyota that used technology previously acquired, and with different purposes, to gain a strategic edge.

Seeing IT as infrastructure, Ciborra questions the malleability suggested in the IT strategic alignment concept suggests. Specifically, he challenges the belief that technology can be aligned with the firm's strategy just by making line managers aware of the benefits of such alignment. By drawing on Actor-Network Theory, Ciborra suggests that IT cannot be that docile. In Ciborra's words IT has the property of *drifting* from managerial directions (Ciborra, 2002). Because of drifting, Ciborra proposes new metaphors for referring to the required practices for integrating IT into organizational life, which are: *cultivating*, *caring* and *hospitality*. Ciborra claims these metaphors are more coherent and meaningful than managerial awareness and the showing of alignment models represented in geometric shapes (in clear reference to Henderson and Venkatraman's model). Hence, Ciborra suggests that research in alignment should be close to people's work and dramas. He also advocates searching for new terms to refer to strategy and technology. In short, Ciborra proposes that criticality and thinking, rather than testing models, should be paramount in this type of research.

2.3. The critical perspective

Unlike the previous positions, the critical view of IS strategic alignment does not concentrate on its domain or in its implementation, but rather focuses on its objectives. In this sense, Scarbrough (1997) argues that most of the IS strategy discourse is normative and motivated by IS groups to justify IT investments. Scarborough says this is done: "...as a response to the dynamics of interpersonal competition..." (p. 171). He states that these beliefs are influenced by the institution and context and the role of the IS function within the organization.

Knights and Morgan (1991) criticize the strategy discourse not only as serving the interests of capitalism but also for being counterproductive. According to Knights and Morgan the strategy discourse is transmitted in the US mainly through business schools and MBAs, and is adopted in Europe because it is associated with North America's economic efficiency. They declare the problem with the strategy discourse – as taught in most North American business schools – is that it negates alternative views to organizations and as a result empowers as well as disempowers particular actors. Therefore, the strategy discourse gives managers a sense of security and simultaneously conveys a message of security to other stakeholders, such as superiors, owners, suppliers, customers and competitors in detriment of workers' contributions. Furthermore, they indicate that given the

preponderance of the strategy discourse, different organizational actors would argue their actions are more relevant within that discourse in order to enhance their power. Thus, Knights and Morgan call for a critical study of strategy. One that concentrates on meanings and its effects on individuals: "...we are suggesting that it is worth examining a little more closely how the [strategy] discourse is formulated, how resources and cultural meanings are drawn into its service and what are its effects" (p. 270). The current study is a response to the requests made by the likes of Ciborra, Knights and Morgan to concentrate on meanings and discourses.

3. Research approach

Given that the purpose of this research is to investigate IS alignment in professional organizations through the meanings organizational members assign to it, we decided to conduct an interpretive study. We describe our detailed research approach in the rest of this section.

3.1. Site, unit of analysis, and timeline

The main criterion in selecting organizations was their professional character; i.e. organizations that are generally non-profit and whose overall aim is to pursue the objectives of particular professions (Mintzberg, 1994). Once this condition was ensured, the only other two requirements were that the organizations exhibited intriguing aspects of IS alignment and that they were willing to grant us access (Buchanan, Boddy, & McCalman, 1988). To provide contrast to our study we also examined an entrepreneurial organization. As such, our study is comprised of data from five Chilean organizations: four professional organizations including two hospitals, one public and one private, and two public universities, as well as a winery as the contrasting entrepreneurial organization. A summary of each organizational background is presented in Section 4.1. We did not intend to conduct comparisons across organizations, but rather enrich our study by bringing different perspectives from each one. In this sense, we consider the particular organizational context when interpreting the data, noting whenever we find contradictions or coincidences. The data were collected throughout August and September of 2002.

3.2. Data collection and analysis

The data collection involved 32 interviews. The interviews were semi-structured and had an average duration of 1 hour and 30 minutes. The primary interview questions were oriented around the meanings organizational members assigned to the domains of IS alignment according to the managerial perspective (see Table 1). The interview guide with its topics is presented in Appendix A. The interviews were not taped, since the themes and contents were sensitive for the subjects. Instead, notes were taken and transcribed immediately after the interview. This procedure has the disadvantage of not being completely faithful to the exact words used by the interviewees (Walsham, 1995). However, it provided the researcher the opportunity to create a more comfortable environment for the interviewees during the accounts and interpretations of their actions. The interviewees were identified through the informants who directed the researcher to individuals he should interview. Appendix C presents a detailed list of the interviewees classified by their

position in the organization. Among those interviewed were: president, dean and associate dean of the universities, the hospital directors, IT managers and analysts, as well as middle managers in charge of operations.

The data analysis was conducted in three steps. The first step consisted of organizing and classifying the interviews through NVIVO. The transcripts were organized according to each particular organization. We also defined attributes which described the hierarchical level of the interviewees in their organization, as well as their years of service. This information was essential for the further stages of the analysis, in order to help contextualize and organize statements by our interviewees (Klein & Myers, 1999).

The second step consisted in finding our initial themes. This was done using the coding capabilities of NVIVO. We proceeded initially by reading all the transcripts, and while doing so we decided the coding of the particular text. These codes corresponded to our initial themes (Sanders, 1982) and were derived by interpreting the data against the backdrop of our theoretical framework (see Table 2). Additionally, emergent themes were given a unique code. Once this process was completed, we produced the tables shown in Appendix B. Each table corresponds to the meanings our interviewees assigned to the different domains of IS alignment (Table 1). The tables reflect our understanding of the data, together with their relationship to both theory and context. These tables were fundamental for developing Section 4. They were produced through an iterative process, as it was necessary to go back and forth from the concepts to the data, and vice versa, in order to ensure that our interpretations corresponded to our initial theoretical definitions (Sanders, 1982).

The third step consisted in completing the hermeneutic circle by interpreting our data according to our theoretical assumptions. The reflections resulting from this iterative process are summarized in themes, which are introduced in the next section. We conclude our analysis by considering the theoretical and practical implications that can be learned from our research, which are presented in Section 5 in the form of insights.

Table 2
IS alignment conceptualizations

Perspectives on IS alignment	Major premise	Literature	Research issue
Managerial	IS alignment as a means for firms to increase profitability	Applegate and Elam (1992), Henderson and Venkatraman (1992), Hirschheim and Sabherwal (2001), Jarvenpaa and Ives (1993), Rockart et al. (1996), Reich and Benbasat (2000)	IS alignment domain: information systems architecture, processes and skills
Emergent	Alignment cannot occur as an automatic response, but rather emerges	Ciborra (1997), Ciborra (2000), Ciborra (2002), Hanseth and Braa (2000), Monteiro and Hepso (2000), Monteiro (2000), Simonsen (1999)	Factors that hinder alignment
Critical	Strategy discourse serves the interest of capitalism and is counterproductive	Knights and Morgan (1991), Knights and Murray (1994), Levy et al. (2003), Scarbrough (1997)	Examine the influence of ideology

4. Results

In this section, we present a brief summary of each site. Following each organizational description we reveal the emergent themes relevant to each case. Subsequent to the introduction of the various sites, the themes will be discussed in greater detail. Table 3 at the end of the case summaries presents a synthesis of our findings broken down by organization. As expected there was a clear difference between what we found in the professional organization with our results from the entrepreneurial one.

4.1. Case summaries

4.1.1. Public University

The Public University is a professional, government organization founded in 1935. At that time, the only career offered was commercial engineering. In 1958, the College of Auditing/Accounting was added to the already existing Institute of Economics and Management, which created a Masters program at the request of OEA (a Latin-American government organization). Prior to this, the college was divided among approximately 17 locations within the region, making communication among campuses difficult. The solution for this problem was to transfer all college components to the same physical location.

Later the college transformed its structure, replacing the institutes with departments in charge of investigation and teaching. At present, there are three departments: Economics, Administration, and Information and Auditing Systems. The current faculty is composed of 55 full-time and 50 part-time professors.

The university's primary mission is education. Colleges are autonomous, although the new dean is attempting to transform them into a unified body so they can increase their influence at the university level. However, the university's hierarchical structure seems to be an obstacle for attaining such objective. Our overall interpretation of the university's culture is that it is conservative.

Information technology services are carried out by the Computation and Analysis Department (CAD). CAD's main objective is to support faculty and to integrate the different departments. The latter is a serious challenge, since each department had traditionally worked in isolation. The CAD is not responsible for systems development they are

Table 3
Emergent themes according to organization

Themes	Public University	Technological University	Public Hospital	Private Hospital	Winery
Theme 1: "Quickly but in a delayed form"	✓	✓	✓		
Theme 2: "IT and the organization should walk hand in hand"	✓	✓		✓	
Theme 3a: "The newer the better"		✓			✓
Theme 3b: "Training as a distraction"			✓		
Theme 3c: "Services are provided as they are required"	✓	✓			
Theme 4: "All the decisions pass by the director"	✓		✓		
Theme 5: "Conservatism and Age"	✓	✓			

developed in central administration and then shipped to each college. However, they do assist with occasional upgrades or add-ons. Recent projects include those for accounting, graduate school and external works of the economics department. The structure of CAD is one of a technology support role. CAD is comprised of six people: three are dedicated to the help desk, one to network, one for development, and one is the director of the CAD.

Main themes

Within the Public University, all five themes emerged. They viewed their overall strategy and ability to react as "quickly but in a delayed form." Their perception of alignment was that "IT and the organization should walk hand in hand." Their approach to services was in line with Theme 3c – "services are provided as they are required" – elaborated in Section 4.2. The bureaucracy theme was present as "all the decisions pass by the director." And finally, they viewed the "lack awareness of the goodness of the technology" as a result of conservatism and age.

4.1.2. Technological University

The Technological University is another example of a professional organization. This public, state university employs approximately 800 individuals at the academic level and close to 500 who are non-academic. The organization's central administration is hierarchical. The organizational structure appears to isolate different departments, and consequently, many decisions are reactive. We deem the organizational culture of the Technological University as conservative and risk adverse. The organizational climate can be considered positive and in general, the personnel seem content. While there is an appreciation for the job stability the university offers, there is a perception the pay is not comparative to the market.

The university's mission is to prepare and educate students to become the best possible professionals. As a means to accomplish its mission, the university's primary strategy is to be positioned at the cutting edge of technology. This ensures that students graduate with the most current knowledge about their career. Furthermore, the university wants to be recognized as a Technological University.

As mentioned above, the Technological University focuses on cutting-edge technology. Some of their applications include: language compilers, database, simulation, internet and multimedia software. The hardware for the Engineering College is distributed among four laboratories in different locations. The total equipment of the laboratories includes eighty 900 MHz Pentium 3 machines equipped with 128 MB RAM, and 20 GB hard disk space; each of these desktops is connected to the internet. There are three servers on the network; two IBM, RS6000s and one PC server for LINUX. There are two 10/100 LANs connected to the internet, which also allow connection to the university's central computing department and their software. The LAN connections are accomplished through the use of an external provider's fiber optic infrastructure.

Main themes

Within the Technological University several themes emerged. Their strategy was viewed as emergent, in line with the theme of strategy "quickly but in a delayed form." Within the

university there was a belief of "the newer the better" and that "IT and the organization should walk hand in hand." The Technological University considered services should be "provided as they are required." Lastly, the conservatism and age of several individuals was viewed as the reason for a "lack of awareness of the goodness of the technology."

4.1.3. Public Hospital

Carabineros (Spanish for Carabinieri) is Chile's national police force, created on April 27, 1927 after General Carlos Ibáñez del Campo's fusion of municipal and federal police forces. *Carabineros* is referred to as the "Forces of Order and Public Security," with a mission to maintain law and order. The organization is under the direction of Chile's Ministry of Defense, with operations controlled by the Ministry of Interior. Within the overall *Carabineros* organization, the Public Hospital is a division of the Health Administration under the supervision of the "National Public Administration of People," which is further commanded by the General Sub-Administration, and ultimately by the top General in the corps. The Health Administration was previously part of the Welfare Administration, and its recent separation has created a new infrastructure – the Public Hospital, directed by officers of *Carabineros*. Its official mission is "to provide health services to all of its customers" (Management Director). The hospital consists of approximately 1500 employees, and has an annual budget close to five million dollars.

The overall organizational climate in the professional organization is conservative and risk adverse. Although a more proactive style is desired, organizational members recognize this would be difficult to achieve due to the financial dependency on the Carabineros institution. The organizational structure is based on military hierarchy, and management positions are derived from military ranking. The organization has a military flavor since Carabineros officers, wearing their military uniforms, hold and perform managerial activities. The hospital's mission concentrates on delivering quality health service at a low cost. Strategic decisions are centralized and made entirely by the Director, a Colonel. However, decisions are made from a needs basis, and are therefore reactive.

The Public Hospital is reorganizing its IT infrastructure in order to decrease dependency on a single provider, thereby increasing buying power. Their hardware consists of 300 desktops connected to three central servers. The network is based on a star topology, and is connected through the use of a LAN. Each building within the hospital's system has an independent LAN, and are all connected to the central servers through fiber optic cables. Connection to the hospital exterior is done through fiber optics and contracted through a company interfacing with a central node, and can thereby provide connection to the entire country. The applications in place consist primarily of manual process automation; for example, "assigning time shifts and schedules electronically" (Computation and Information Division Analyst). The hospital has recently shifted from working with multiple files to utilizing a database. An additional conversion has taken place from previously centralized systems and processes to the distribution of these activities to their respective areas.

Main themes

Several themes surfaced from the public hospital. One was related to their strategy which was "quickly but in a delayed form." The next theme viewed "training as a distraction." In addition, bureaucracy was apparent as "all the decisions pass by the director."

4.1.4. Private Hospital

The final example of a professional organizational is a clinic that was founded in 1905 as a private corporation. It was created in order to satisfy the health needs of the German-Chilean colony. The first clinic, which is the present Dávila clinic, was opened in 1917 to care for the general community. The clinic remained in this area until 1970, when the present land was bought. The doors were re-opened in 1973 under the same structure of a private corporation. In 1996, due to advances in health and legal changes the decision was made to separate the clinic from its parent company (CDPSFL), thereby forming a corporation that competes in the private health market. There are 1800 hired employees, in addition to the doctors that participate without a labor contract. In total, the clinic has approximately 2000 reputable doctors, of which approximately 300 lease the consultation rooms, and the remaining are residents.

The clinic is focused on the patient and in creating a satisfying work environment for employees. Confidence in the clinic is fostered through good benefits and communication. The clinic's strategy is growth, development and competence to use information and technology in order to be the preferred choice of patients and insurance companies. The clinic leads the private medicine sector in its risk-taking characteristic. The organizational structure is conservative, extremely hierarchical and reactive; however, it is in the process of moving towards an increase in proactive decision making.

The clinic describes its system as belonging to two environments: administrative and strategic. The administration system relates to business operations such as the collection of services, accounting, registration, and so forth. The strategic environment system emphasizes meeting the needs to support the clinic system's medical work.

The clinic's main platform is based on a bi-processor Alpha DS20 server with an Oracle database. There is a network that connects all the servers and clients with the number of users between 500 and 1000. The idea behind the current infrastructure is to support the technological clinical functions. The clinic wants to integrate different systems in order to produce all the information necessary for decision-making. They are currently developing an electronic medical record system whereby all patient data can be entered and extracted.

Main themes

The private hospital provides another example of Theme 2 in Section 4.2: "IT and the organization should walk hand in hand."

4.1.5. Winery

The Winery, established in 1885, was founded and led by a Chilean family. The entrepreneurial organization is divided into three companies: the Vineyard, the distribution and a subsidiary producing wine in bulk. Together these companies employ approximately 500 individuals. After recent widespread financial problems within the industry, the Chilean family was forced to incorporate with a Colombian brewery, owned by a Colombian family. As a publicly traded organization with over 400 shareholders, the Colombian family has been able to attain majority shares in the Winery. The mission has timelessly remained the production and sale of fine wines, with a primary focus on winegrowing.

Since the Winery's origins are a family-owned corporation, its' senior management strive to nurture an atmosphere of intimacy and confidence. The organizational structure is highly interdependent. Therefore, departments are not autonomous, but rely on

upper management decisions and information provided by various departments. Information systems are seen as crucial in order to facilitate this interconnectivity and assist in the strategy of becoming a major presence in national and international markets.

The Winery's hardware consists of IBM, Compaq, Sun and Toshiba notebooks, which are all connected to the network. There are approximately 120 users who are on an infrastructure that encompasses the entire organization. The organization is currently undergoing a corporate information system upgrade which is replacing a system that had been in place for nine years. Three projects being implemented include a system dealing with sales and billing, a method to organize management (setting the foundation for management to obtain more control), and lastly, a CAP implementation.

Main themes

The winery interpretation provides affirmation for Theme 3a – "the newer the better."

4.2. Interpretations of strategy and IS alignment

In this section, we discuss in detail the themes that surfaced from the various organizations. These themes represent the interpretation that organizational members gave to the managerial conception domains. Following a discussion of emergent themes, we will describe the various explanations individuals gave for alignment hindrances.

4.2.1. Theme 1: Strategy "quickly but in a delayed form"

In terms of the organization's overall strategy and its perception by their managers, we see contrasting views in professional and entrepreneurial organizations. For example, in the following quotes we can see the general managers' struggle to explain the organizational strategy:

> The organization is reactive. It reacts well and quickly, but in a delayed form. *Administrative Controller, Public Hospital.*
> [The organization] tries to be proactive, but finally, falls into the reactive [category]. *System Engineer, Public Hospital.*
> The University is 100% conservative, that is to say, it does not assume risks. *General Planning Director, Technological University.*

This reactive and conservative position contrasts with the view of strategy portrayed by the general manager of the entrepreneurial winery:

> The truth is that by seeing the present [IS] technology, and how it serves us daily, to see what we are learning, how we are learning it and logically to align our basic strategy to the present situation, clearly; because it is a dynamic strategy that has a certain degree of unpredictability, that serves us by giving daily sales information, products with profit margin, and which segment of the market or product area to place our priorities, where we have to reinforce efforts because the sales have fallen, or because a new market has been created; these findings are also supported with information that we buy in the market. For example with the new system that we are implementing, we want to integrate all the areas inside the business. *CIO, Winery.*

This proactive attitude towards IS strategy found in the winery contrasts with the conservative nature of the public organizations, which were not sure whether they understood their situation in relation to strategy. We learned this when we asked about the status of IS alignment. For example, when the public hospital's deputy director of physicians was asked about alignment, he answered:

> I cannot answer [if there is alignment] because I do not know the strategy. That says a lot. I believe that one of the problems here is that there are not clear policies and the decisions of upper management are not always clear.

The theme was also found among IS staff of the hospital. The CIO put it this way:

> Outside of the [IS] division, there may be sectors that do not have a clear understanding of the business direction, and because of this situation, a lack of mutuality of goals exists, preventing the organization's desire to be as responsive as possible. Everything is strictly regulated and should be able to be aligned, but there are sectors that are unaware because the communication between the leaders and the remainder of the personnel is not optimal; there is no communication to lower levels.

4.2.2. Theme 2: IS alignment: "IT and the organization should walk hand in hand"

In this subsection, we discuss the interpretations given by organizational members to the concept of IS alignment. It is puzzling to see that despite the lack of a clear strategy, as is the case in public organizations, organizational members still give a positive sense to IS alignment. We found that in professional organizations, when talking about alignment, most of our interviewees were referring to benefiting the students or patients by providing better services as the result of having newer IT. When the CIO of one of the public universities was asked about the organization's IS alignment, he responded:

> I believe there is [alignment], because IT and the strategy have to walk hand in hand. All of our technological expansion is related to what the university wants for its students, professors, etc. *CIO, Technological University*.

This quote demonstrates a common theme we found in the data, discussed with more detail in the next subsection. The theme reveals a belief by the professional organizations that IS alignment is something that occurs almost naturally by merely purchasing new technology. Furthermore, the quotation suggests that the main university "strategy" is to serve the university stakeholders, staff and faculty.

The meaning assigned to IS alignment in the private, professional organization was similar, in the sense of equating it with the acquisition of new technology. However, it was different in the sense that alignment was deemed as the integration of different departments and the production of up-to-date information for decision making and timely reactions. This observation was clear in the private hospital:

> The official strategy of the clinic is beginning to be supported by the two systems they want to implement (electronic files, laboratory). They make the work appear as a whole, not isolating one doctor from another... The idea behind the creation of the technological infrastructure is to support the clinic functions requiring

technology, and to provide flexibility in order to integrate different systems. *Operations and Technology Manager*.

In the quotation above, the emphasis on integrating different systems is evident, and the belief that technology can automate different functions in the hospital as well as integrate them, so that the work is seen as a "whole." The other belief is that the automation of systems and the introduction of technology can improve decision making. This theme may suggest that what is important is a level of "internal IS alignment," consisting of aligning the organization's different departments. Indeed, this was also a common theme in the public universities:

> Today, within the colleges, there is an effort to work together, with all the independent divisions, to be able to join efforts towards the same path. It's not an easy process, due to the fact that each division has distinct objectives and interest. *College of Economics and Administration Director, Public University*.

4.2.3. Theme 3: The alignment of technology; skills and IT processes (3a) "the newer the better;" (3b) "training as a distraction;" (3c) "services are provided as they are required"

In terms of the technology, we found the theme of "the newer the technology the better," a motif that was common in professional as well as entrepreneurial organizations:

> In reality, we use the best, state-of-the-art software so that the students are up-to-date and do not leave without the most current knowledge of these techniques or this software. *Professor and coordinator of computer lab, Technological University*.
> The moment that they [IT personnel] put the latest in technology at their disposition, they have to be aligned to the company's strategy. *Treasurer, Winery*.

The last quotation shows the belief that new technology, by itself, can bring about alignment. Furthermore, the belief of achieving alignment simply by implementing the latest technology ultimately benefits those organizations selling technological solutions. This reinforces Knights and Morgan's (1991) view of the strategy dialogue as serving capitalist interest.

As mentioned in the subsection above, the difference in the private organizations' IS alignment aims was their desire to integrate different departments:

> For example, with the new system that we are implementing, we want for all the areas inside the business to be integrated. *CIO, Winery*.

While in the public sector, the main strategic objective was the service to the public:

> We are using the technology as a means for the students to graduate more prepared, creating laboratories specific to careers, complementing the general laboratories, and buying specialized software... *President of the Technological University*.

Thus, in this theme we see what Ihde (1993) calls "technology as cult." This means assigning attributes to technology which are almost magical. Ihde asserts that as humans, we like to see qualities in technology that we do not possess, such as speed and durability. The challenge for practitioners is to educate users in technology characteristics and their operating mechanisms that can help services and integration. We argue that looking at technology as a cult will not facilitate alignment, but rather can create false user expectations that later can create resistance to the systems (Silva & Backhouse, 2003).

Regarding the skills theme, we found that most of the courses and training are related to the operation of the technology used to provide services. We found this theme in both public and private organizations. As can be seen in the quotation below, IT-related training is aligned with the "strategy" of one of the public universities by providing students with exposure to technology:

> One of the objectives in training is in staying up-to-date concerning hardware and software; the other is to train the laboratory operators, those in charge of routine management, in knowledge related to servers, networks, and databases. Then they are regularly sent to courses and training, so they can attend to the majority of student consultations. *Professor and coordinator of computer lab, Technological University*.

We found the main training theme occurred sporadically, training was considered to be a distraction, and was authorized only when the course was shown to benefit the organization. Thus, training was not conceived as a means for improving the tasks or job satisfaction, but it was considered to be an expense:

> There is training, but neither in the amount we would like it, nor can we provide all the facilities. We work under great pressure, so the decision to train staff would entail a distraction for staff. Sometimes I suggest the names of people who would like to take a course to the Director, and I provide reasons why they should be supported. However, the Director seldom accepts these proposals. *Deputy Medical Director, Public Hospital*.

Therefore, the lack of skills acquisition in this case is a consequence of the belief of IT skills as an expense. This is relevant for IS managers working in this type of organization, since this is what they will be facing. Senior managers who might be interested in transforming an organization from a conservative modality to another approach will also have to consider altering the belief that IT training is a distraction; otherwise the organization will not obtain the necessary skills to achieve the transformation. In addition, we found the lack of training or being considered for training was a source of dissatisfaction and demotivation for personnel.

The lack of what is considered to be formal strategic thinking was also noticeable in the IS processes, which are how the organization delivers and manages the provision of IS services. For example, the applications and services are delivered according to the needs of each department, i.e. they are emergent, rather than responding to an overall strategic plan:

> The applications or programs that they are going to develop are decided according to the existing needs. At times there are requests, which are then evaluated and decided. *Manager of Organizational processes, Public University*.

This lack of formal requests for applications and programs was not found in the private organization. In the private hospital, we found that a process exists whereby IT requirements are discussed in light of the entire organizational strategy:

> The manager of operations and technology participates in the global strategic planning... IS supports the business. IT does not have its own strategies. It is aligned according to the general management guidelines or the strategic planning group. *Operations and Technology Manager, Private Hospital*.

From the theoretical point of view, our data interpretation enriches our understanding of the manner in which these types of organizations structure their IS processes. We found that in the private professional organizations the processes for procuring IS services were structured and stipulated beforehand. As Mintzberg (1994) would say, they are structured in a Taylorist fashion. The situation is different in the public organization where the services are obtained through less structured processes; i.e. through direct negotiations among line managers. The problem here is that resource acquisition may be the result of managers playing political games in their attempts to take advantage of the lack of structure (Mintzberg, 1983; Pettigrew, 1972).

4.3. Interpreting the reasons that hinder alignment

Having discussed the meaning IS alignment has in professional and entrepreneurial organizations (that of using the ultimate technology, integrating systems, and providing better services to the public), we now draw our discussion to the reasons these organizational members provide when interpreting the difficulties for achieving alignment. This emphasis will allow us to tease meanings out of the processes by which organizational members attempt to enact IS strategic alignment.

4.3.1. Theme 4: Bureaucracy "All the decisions pass by the director"

Our data suggests the main reason imputed by our interviewees for hindering alignment is the organizational bureaucracy; that is, the procedures requiring that all initiatives must be derived from and authorized in the top hierarchies.[2] The following excerpts illustrate this theme:

> All the decisions pass by the director. *Assistant Medical Director, Public Hospital.*
> The priorities are defined by the department director; if he determines that there should be investment in something specific, it is done. If not, it remains on the back burner until there is another opportunity. *Systems Analysts, Public University.*
> The university structures are mainly hierarchical. *Associate Dean, Public University.*
> There is a very strong hierarchy here. *Associate Medical Director, Public Hospital.*

Thus, we found that public professional organizations will find it very difficult to implement IS strategies given their inflexible and strict bureaucratic procedures. This is noted by the CIO of the public hospital:

> The alignment is affected by the bureaucratic administration; the slowness of reaction time makes it difficult to realize agility and affects the user's experience with various systems.

Due to the political nature of public professional organizations, managers have less discretion in decision-making and less authority over their subordinates (Mintzberg, 1983). This is not the case in a private organization whose statutes and processes are much more flexible, and changes can be legitimized with discourses regarding efficiency and profit. Bureaucratic procedures are also much stricter in public than in private organizations.

[2] The interviewees used the word "dificil" and "costar" in Spanish, which are terms used to connote the impossibility of something without being categorical. In Latin culture, being categorical with a stranger is considered to be impolite. Therefore, whenever these words are used, we interpret them as indicating the reasons why alignment is not possible.

Bureaucratic regulations and monitoring mechanisms typical in public organization result in a detachment between organizations and employees, such that public employees tend not to identify themselves with their organizations (Bozeman & Bretschneider, 1986). The strict "red tape" constrains public organizations in retaining or hiring skillful employees because they cannot be hired, fired or promoted at will (Caudle, Gorr, & Newcomer, 1991; Dufner, Holley, & Reed, 2002).

The integration obstacle represented by bureaucracy is illustrated in the following excerpt from the administrative manager of the public hospital:

> To reach the administrative area from the medical area, one has to pass through the director. There is no direct relationship between the administrative division leaders and the medical division leaders. This situation creates a bureaucratic system and the communication does not flow rapidly. Every official procedure is done on paper and then passed through the required hierarchical levels. There is no electronic communication inside the hospital. *Managing Director*.

This theme suggests the "strategic" challenge for non-profit professional organizations in deploying strategic IS consists of designing and implementing systems that help to expedite bureaucratic procedures and aim at the horizontal integration of the various departments. This is a formidable challenge, since organizational members' identity and sense of power is provided by their contingent position in the organization (Hickson, Higgins, Less, & Schneck, 1971; Hinings, Hickson, Pennings, & Schneck, 1974). Any threat to their control over resources may result in resistance (Pfeffer, 1992; Silva & Backhouse, 2003).

4.3.2. Theme 5: Conservatism and age "They lack awareness of the goodness of the technology"

Since members of professional organizations associate IS alignment with the acquisition of the most recent technology,[3] it follows that – when reflecting on the reasons for **not** achieving alignment – they identify age and conservatism as alignment hindrances. The relationship between conservatism, age and lack of technology awareness is prominent in the public universities:

> The University is 100% conservative, that is to say, it does not assume risks. *General Director of Planning, Technological University*.
>
> The principle reason [IS alignment is not attained] is cultural; there are slow processes that are heading in that direction, but it is difficult because the university is aging. Now there are professors around the average age of 50, yet those individuals around the age of 60–65 are precisely the ones who make the decisions and who did not grow up with technology. *Dean, Public University*.

This theme supports the findings of Reich and Benbasat (2000) who, from the positivist perspective, argue for the need of social alignment. As they proposed, there cannot be alignment if mutual understanding does not exist between IS managers and other executives. The following excerpt from the interview with the public university's CIO clearly illustrates this idea:

[3] In fact, we found this to be present as well in the entrepreneurial organization. The reason behind this commonality could be very well the source of other empirical studies.

> Given that the institution as a whole is very conservative, the [*IT*] unit acquires the same character, but this unit should have the most recent technology.

This example further illustrates the relationship that we previously established between new technology acquisitions and IS alignment. Moreover, if lack of awareness is associated with age, the challenge for an IS manager attempting to achieve IS alignment is to educate their users and colleagues regarding the demystification of technology, and perhaps not completely dismissing age or conservatism as a hindrance. However, from a critical viewpoint these "older" individuals may be playing the role of critical thinkers in the organization. We should perceive them as such, and not simply dismiss their concerns because they are "elderly." Critical studies of technology suggest that the cult of technology can be alienating for society and organizations, since it is clear that new technology per se is not going to bring benefits (Borggmann, 1984; Feenberg, 1999). In this way, listening to those older individuals may bring a fundamental and valuable element to their organizations. Therefore, the challenge for the IS manager in a professional organization, is to balance conservatism on the one hand, with the cult of technology on the other. Indeed these themes suggest more managerial challenges as well as theoretical implications which are presented in the next section.

5. Discussion

In this section, we introduce a set of four insights that reflect analytical generalizations derived from our reflection on the themes against the backdrop of our theoretical perspectives. The relationship between the themes and the insights is presented in Table 4 at the end of this section. As it is displayed in the table, the emergent perspective is clearly reflected in Insight 2. Similarly, Insight 1 is linked to the managerial and critical perspectives as it conveys the imperative that an organization should be aligned. The same can be observed in Insight 3 which shows its critical dimension in considering training as an expense. As it can be seen in Table 4, our analysis displays the close association between the managerial and critical perspectives; the latter questioning the former. In this sense, Insight 4 is a direct critique to the managerial rationale of agility and resource dependency views. The rest of this section develops in more detail each of the insights.

5.1. Insight 1: CIOs interpret IS alignment as a duty and as an obligation

Our data shows (see Theme 1) that IS managers regarded IS alignment as something positive, an ideal they should strive to achieve. Given that our questions regarding alignment (see Appendix A) were not preceded with a corresponding concept definition, what we report are our interpretations of the interviewee's assigned meanings to the term "IS alignment." This imperative view of alignment, specifically in interviews with CIOs, was a constant in our data. We observed that managers considered it their duty to attain alignment. Moreover, we perceived they would feel ashamed if they were to report their organization did not exhibit any degree of IS alignment. When the questions about this topic were asked, we noticed the CIOs almost felt as if the questions were formulated to quiz them about whether or not they were performing their jobs. This insight supports the thesis of IS critical theorists who suggest that strategy is a discourse that exerts power over managers.

Table 4
Themes

Theme	Explanation	Insights	IS alignment perspective
Strategy: "Quickly but in a delayed form"	The public organizations appear to be reactive. While private organizations were found to be analyzers.	2. In professional organizations IS alignment is an emergent phenomenon	Emergent
IS Alignment: "IT and the organization should walk hand in hand"	Public organizational members give a positive meaning to IS alignment, and see it as a means for providing better service. Private organizations view alignment as the integration of varying departments and the creation of up-to-date decision-making information.	1. CIOs interpret IS alignment as a duty and an obligation	Managerial/ critical
Applications and Hardware: "The newer the better"Skills: "Training as a distraction"	Both public and private organizations believe that new technology can create alignment.	3. In a professional organization decisions regarding IT skills, IT acquisitions and the development of applications will depend on what senior managers consider to be 'necessary'	Managerial/ critical
IS Processes: "Services are provided as they are required"	Both public and private organizations were reactive in their skills acquisition. Public organizations were also reactive in regards to IS processes.		Emergent
Hindrances: "All the decisions pass by the director"	Organizational bureaucracy is the main alignment hindrance; as such they are slower to react to the market.	4. IS strategy concepts such as agility and resource dependency of the firm makes little sense in the context of professional public organizations	Managerial/ critical
"Conservatism and Age"	There exists a relationship between conservatism and age, with that of lack of technological awareness making alignment difficult due to a lack of mutual understanding.		

In addition, this insight suggests a methodological implication particularly for qualitative researchers. It stems from what Klein and Myers (1999) entitle the *principle of suspicion*. This principle calls for researchers to recognize that interviewees may answer questions in a way that reflects what Klein and Myers refer to as distorted pre-conceptions; i.e. false consciousness. Klein and Myers specifically call for the application of this principle citing critical studies that allege that subjects may be influenced by ideology when being interviewed (p. 83). In our case, an instance of this was CIOs and other senior managers believing that IS alignment is an imperative. We came to this realization after the data had been gathered, so we could not integrate it into our initial theorization and research design. However, we recommend that researchers should be aware of this

pre-conception when asking questions related to what their interviewees may consider to be their duty. In those cases researchers will likely obtain positive answers.

Furthermore, Insight 1 suggests a clear managerial implication. Given the imperative meaning that IS alignment has for IS managers, senior executives wanting to start IS alignment initiatives may expect support from their IS managers. This is not a trivial implication given that resistance to IS initiatives is not uncommon (Jasperson, Carte, Saunders, & Butler, 2002; Silva & Backhouse, 2003). Likewise, Insight 1 suggests that for future plans of implementing innovations, CIOs would accept it with more enthusiasm if the innovation were convincingly associated with the idea of IS alignment. Nevertheless, the major challenge is to convey the exact model that senior management expect their IS personnel to adopt. As will be discussed below, this may not be an easy task.

5.2. Insight 2: In professional organizations IS alignment is an emergent phenomenon

This insight supports the thesis of Ciborra (1997) in calling Henderson and Venkatraman's (1992) model an unrealistic abstraction. None of the organizations we studied presented an alignment model such as the one proposed by Henderson and Venkatraman. Instead, our data shows that senior management and CIOs had an alignment perception that was contingent on the nature of their organization. For example, IS alignment in professional public organizations was envisioned as IT serving the organization's mission; whereas in private ones, IT was deemed to achieve senior management's objectives. It may be argued that in the latter, the IS alignment conception tends to be closer to academic models. However, we found that in private organizations, the alignment concept was not as detailed as the one proposed by specific models (Henderson and Venkatraman) which prescribe precise arrangements for hardware, applications, skills and processes. The fact that CIOs were not aware of such an alignment definition suggests an explanation of why very few organizations achieve IS alignment as prescribed by academics (Luftman & Brier, 1999). The answer is simple: managers do not know them.

Therefore, Insight 2 suggests the implementation of IS alignment models require that IS and other managers learn in detail and share the meanings of the domains of a specific model as a first requirement. This implication may look trivial. Nevertheless, several pieces of research assume the opposite; i.e. that managers share an understanding, one that is clear and consistent regarding the meaning of alignment (see for example Reich & Benbasat, 2000; Sabherwal & Chan, 2001; Sabherwal et al., 2001). Thus, for IS researchers, this insight implies that when designing studies to assess whether organizations attain alignment or not, they must consider that both groups, researchers and IS managers, may be referring to two different phenomena with the same IS alignment term. Hence, it would be a theoretical error to believe that organizations will exhibit the IS alignment characteristics as stated in prescribed models, unless they have previously committed to the implementation of the specific model that is being tested.

Accordingly, it would be an error to attempt to study – using statistical techniques – populations of organizations with the purpose of establishing whether or not they comply with an alignment model. As an alternative, researchers interested in learning how IS alignment actually occurs may adopt action research as their research strategy (Baskerville & Wood-Harper, 1996; Lau, 1998). The intervention of such a study would be the purposeful implementation of a prescribed IS alignment model. Qualitative research can also help researchers to explore different emergent (as opposed to prescribed) IS alignment

arrangements. Multiple case studies can be conducted to establish the different archetypes that organizations exhibit in their alignment arrangements. The results of such types of studies can be the basis for conducting confirmatory studies that rely on statistical techniques.

5.3. Insight 3 – In a professional organization decisions regarding IT skills, IT acquisitions and the development of applications will depend on what senior managers consider to be 'necessary'

The key word in this insight is 'necessary.' That was the term our interviewees used to describe the criteria applied to decide about training, acquisitions and application development. We found that in determining training, the major criterion was concerned with the use of the current IT infrastructure; anything else would have been considered a waste of time and money. Likewise, IT acquisition was decided by establishing whether or not the new equipment would be used for achieving the organizational mission. Our data confirms that a similar criterion was utilized in selecting new application development. Accordingly, applications would only be developed once its prospective users had demonstrated the necessity of the new systems for carrying out their jobs.

Furthermore, this insight suggests that senior managers held almost total discretion regarding technical aspects of IS alignment. Since, as shown in our case, most senior managers are considered "old" and unaware of the strategic potential of IS, it follows that professional public organizations will face a monumental obstacle for deploying IS with strategic purposes based on the acquisition of newer technologies. Accordingly, professional public organizations face a *chicken and egg situation*. How will managers and IT personnel be aware of the strategic possibilities of IS if training and spending for this area is considered to be unnecessary? Yet, the only way of changing the view that those activities are unnecessary would be by training. One way of breaking this circle would be if the organization was to undergo a crisis that would threaten its existence (Gersick, 1991). Such a crisis may bring newcomers possessing the knowledge required for the strategic possibilities of IS.[4] From the research perspective, this insight invites researchers to design studies that would test its empiric validity. It would be interesting to establish if this would be the case in most professional organizations regardless of their size and mission.

5.4. Insight 4 – IS strategy concepts such as agility and resource dependency of the firm makes little sense in the context of professional public organizations

Recent research on strategic aspects of information systems has focused on agility, dynamic capabilities, and the resource based view of the firm (Bharadwaj, 2000; Sambamurthy, Bharadwaj, & Grover, 2003; Wade & Hulland, 2004). The resource based view of the firm argues that by controlling and appropriating rare resources, firms can gain competitive advantage. The intent of this theory is to explain why some firms

[4] For a detailed account of how crisis can engender the use of IT with strategic purposes in public organizations see Silva and Hirschheim (2007).

are able to maintain competitive advantage while others do not (Bharadwaj, 2000). This occurs when an organization holds resources that other firms cannot imitate (Wade & Hulland, 2004). Wade and Hulland define resources as assets or capabilities that are available and ready to use in identifying and grasping market opportunities or responding to threats. While assets are entities used in the production of goods and services, capabilities are repeatable patterns of actions in the use of assets to create, produce, and/or offer products to a market (cf. Sanchez, Heene, & Thomas, 1996). In this sense, the resource based view of the firm is similar to recent approaches on agility (Brown & Eisenhardt, 1997; Eisenhardt & Martin, 2000; Wade & Hulland, 2004; Webb & Pettigrew, 1999) and dynamic capabilities (Sambamurthy et al., 2003). In essence, these theoretical approaches focus on the way in which private firms use and manage resources and capabilities to achieve and maintain a strategic advantage and enhance performance.

We argue that, although illuminating, these theoretical approaches may not be totally appropriate for studying non-profit professional organizations. This is not only because the approaches are based on private firms, but also because they assume an unstable competitive environment. In the private sector, managers interpret the environment and decide how to align its IT (Wade & Hulland, 2004). By contrast, our data shows that managers in professional public organizations, when deciding about IS, interpret two different sources: one is the organization's mission and the other concerns the personnel's needs. Furthermore, public organizations would find it difficult to be agile because of their strict bureaucratic procedures. This stable, predictable public environment coincides with Mintzberg's (1994) explanation that strategic programming is only beneficial under specific, expected circumstances. In most cases, changes to those procedures would require structural changes in the organization (Silva & Hirschheim, 2007). Therefore, this insight suggests that more research is needed to identify the areas in which IT can be applied to strengthen professional organizations. This insight is supported by what Ring and Perry (1985) observed when they suggested that models of strategic management developed in private organizations do not hold in non-profit ones.

From a critical stance, agility and resource dependency theories are problematic as they promote the ideology of efficiency and profit. They are difficult because, as we found in our data, they make managers feel as though they are under the obligation to achieve strategic alignment, even if this state is impeded by organizational procedures. Likewise, these discourses encourage an unfavorable connotation to those who dare to challenge the acquisition of newer and more expensive technology. In our study we found those individuals were almost stigmatized as old fashion or as simply being old for opposing those technological acquisitions. It is apparent that CIOs and vendors of technology are those who benefit from the belief that IS alignment is a supreme value associated with the acquisition of new and expensive technology (Scarbrough, 1997). Hence, it is not surprising that those against such a value are considered to be against 'progress.' However, as the IS alignment literature demonstrates, the failure of expensive systems to deliver are the norm rather than the exception (Silva & Hirschheim, 2007). Thus, in this situation, a critical researcher would advocate for two degrees of emancipation: (1) the right of managers to feel free from a burdensome discourse and (2) the right of questioning technology acquisition as a supreme value.

6. Limitations

We found two major limitations in our study. The first limitation refers to the scope of the paper. This study is confined to the interpretations that organizational members assigned to terms such as IS alignment, as well as the fact that the barriers identified were blocking efforts towards alignment. Therefore, the study cannot be extrapolated to identify contextual and procedural influences; i.e. we do not know the historic and cultural factors that influenced these meanings and such barriers. Without a doubt, further studies focusing on such aspects can enrich our understanding of IS alignment and may complement or even refute our findings. The second limitation concerns the empiric content of our investigation. For this study, we were granted access to Latin-American professional organizations. Clearly it would be of great value to conduct similar studies of organizations in other contexts. These types of studies can help us to compare whether national and/or cultural contexts influence the meaning of IS alignment. Obviously, we cannot anticipate whether those studies will confirm or reject our findings. Nonetheless, in either case they would be contributing to strengthen and extend a very relevant research program in our field, that of IS alignment.

7. Conclusion

This study has contributed to our understanding of the meaning that professional organizations assign to IS alignment. We found that organizational members conceive IS alignment very differently than proposed academic models. These findings have provided us with interesting managerial and research implications. We claim that our multiple perspective theoretical framework helped us in achieving our research objective. This may have not been the case had we adopted a single perspective. The managerial perspective provided us a solid starting point and helped us in identifying in detail what are the domains of IS strategic alignment. The emergent view provided us with the emphasis on IS alignment implementation. It was by virtue of this perspective that we were able to identify the reasons organizational members attributed to achieving or not achieving alignment. Finally, the critical perspective was of great help for explaining the genesis of the assigned meanings. We found that our data supports the thesis of critical theorists in the sense of seeing strategy as a dominant discourse in which managers and IT vendors are benefited. We believe that we would have not been able to obtain a rich picture of the IS strategic alignment phenomenon had we approached it only from one perspective.

We have also ascertained that further research is required in order to identify the areas in which IT can strengthen professional non-profit organizations. Our data suggests the challenges faced by professional organizations when attempting to introduce any type of strategic change. The difficulties seem to stem primarily from their bureaucratic procedures, their centralized decision-making arrangements and the challenges presented by learning and assimilating the alignment models. In analyzing our data, we were able to propose four theoretical insights that are open to empirical confirmation or refutation. Therefore, we believe we achieved our research objective: to grasp the meanings that organizational members assign to IS alignment. Although much more research is needed in this relevant topic, we hope that this paper will contribute to the growth of this important research program.

Appendix A. Questionnaire guide

1. How is IT and information systems used to carry out the mission of the organization? Are the IT and information systems linked to strategies of the organization? How?
2. Taking into account the current systems and technologies, do you see any strategic opportunity?
3. What was the prevailing criteria in designing the current structure of the IS group? Have you ever consider the relationship between such a structure and its impact in organizational strategies?
4. What was the rationale in the designing and implementation of the current IT infrastructure (the design of networks, telecommunications, etc.)?
5. What has been the criteria and rationale prevailing in the planning and execution of operations related to information systems? i.e. Who set the priorities for the development of new applications? What are the main criteria in making such decisions? Who defines the requirements? How are these requirements defined?
6. In the information systems area, what are the prevailing criteria in hiring and training personnel?

Appendix B

B.1. Public University

Concept	Research issues	Syntheses of interpretations
Applications (software and portfolio of applications, data bases)	How are the applications, systems and computer programs linked to strategic alignment initiatives or radical change?	There is a decision to support strategic objectives of implementing management control systems. For this reason, the university is implementing a global communication system which will allow the submission of all information to the vice-dean. Because the university organizational systems do not satisfy the college level needs, each college is involved with creating their own parallel systems
Hardware (hardware configurations, networking, communication technology, technical infrastructure)	What is the rationale behind the current IT infrastructure? Who designed it? Who is responsible for making decisions regarding the new IT? Who designed the current IT infrastructure?	The IT infrastructure was designed to automate management processes and offer a more complete service to students. The idea behind the infrastructure was also to adapt and be up to date with modernity The technologies chosen are utilized to relate students and professors. At the college level, the design for system structure arose from a needs basis, without much thought as to the impact of the system's structure on strategy

(*continued on next page*)

Appendix B (*continued*)

Concept	Research issues	Syntheses of interpretations
IS processes (work processes related to the operations of the IS)	What are the necessary steps for conceiving and authorizing new IS projects? What are the necessary administrative steps to obtain IS services? What is the rationale to prioritize new systems and services provided to users?	The planning and deciding for systems is done by the current dean. He priorities the teaching theme and decides the parallel development of needed technologies. These technologies are based on the criteria of the dean, and the support of the Computation and Analysis Department. In regards to each college's computational department, each person is responsible for a certain type of need. Any hardware requirement decisions are consulted with the college's computational department where there exists a methodology to analyze the system needs. As far as systems, a small feasibility study is conducted. However, the college level IT departments do not make major decisions. Technology priorities are defined by faculty necessity
Skills (the acquisition of training, knowledge for managing and operating IS)	What are the skills and knowledge regarding IT of the current personnel? What is the rationale for hiring and training new personnel? What are the promotion and incentive systems?	Hiring is based on resumes submitted after a public notice. The hiring criteria are based on planned projects and the respective personnel needs. Personnel are selected on the basis of the most knowledgeable and professional competence that can be acquired with the available resources. Experience is not a requirement since individuals will gain the needed experience and training working for the college level IT department. The college IT departments cannot give compensations; these are only available when the decision is made by the dean

B.2. Technological University

Concept	Research issues	Syntheses of interpretations
Applications (software and portfolio of applications, data bases)	How are the applications, systems and computer programs linked to strategic alignment initiatives or radical change?	The university focuses on cutting edge applications. Most of those applications in place are language compilers, database software, simulation software as well as an internet. The reason for focusing on recent technology is to maintain their students at a level where they are graduating with a thorough knowledge of the current available technologies

Appendix B (*continued*)

Concept	Research issues	Syntheses of interpretations
Hardware (hardware configurations, networking, communication technology, technical infrastructure)	What is the rationale behind the current IT infrastructure? Who designed it? Who is responsible for making decisions regarding the new IT? Who designed the current IT infrastructure?	The current IT infrastructure design was created by the system and operation areas. The principle idea behind the infrastructure was to interconnect the university. This interconnected infrastructure provides communication tools to all the faculty and administration. Requirements are defined by the manager of each area (and those individuals he decides should be involved in the planning)
IS processes (work processes related to the operations of the IS)	What are the necessary steps for conceiving and authorizing new IS projects? What are the necessary administrative steps to obtain IS services? What is the rationale to prioritize new systems and services provided to users?	Application development is based on necessity. When requests arise, they are evaluated and then decided. The President plays an important role in this decision making process. The criteria for acquiring technology are based on student need; for this reason most funds are awarded to the laboratories. The priority for services provided to users is first to the administration areas within teaching
Skills (the acquisition of training, knowledge for managing and operating IS)	What are the skills and knowledge regarding IT of the current personnel? What is the rationale for hiring and training new personnel? What are the promotion and incentive systems?	Experience, competence and professional credentials are all considered important, but come second to a proper title. In general, there are no specific criteria for recruitment since thorough training takes place through outside organizations specializing in different areas. In one department, the knowledge of a certain tool is a hiring requirement since the tool does not have universal knowledge. There is no promotional system, however, there are merit awards, and training is considered a benefit. There is a need to recruit those individuals who have the ability to rollout new projects. There are disciplinary measures in place; those employees who rank poorly for two consecutive years are fired

B.3. Public Hospital

Concept	Research issues	Syntheses of interpretations
Applications (software and portfolio of applications, data bases)	How are the applications, systems and computer programs linked to strategic alignment initiatives or radical change?	The existing applications are involved with actualizing efficiencies. For example, assigning time shifts and schedules electronically. To support efficient daily operations of each area, the previous use of multiple files have been converted to the utilization of distributed databases, systems and processes. They started working with multiple files until we switched to databases
Hardware (hardware configurations, networking, communication technology, technical infrastructure)	What is the rationale behind the current IT infrastructure? Who designed it? Who is responsible for making decisions regarding the new IT? Who designed the current IT infrastructure?	The principal design rationale was to create an optimal service for the hospital so that all have continual access to information needed to complete their function. Additionally the hospital desired to facilitate communication and integrate data. The IT infrastructure was designed to have a more open platform which could allow for the utilization of multiple providers and thereby better positioning as a consumer. Medical equipment is obtained through a public request for proposal
IS processes (work processes related to the operations of the IS)	What are the necessary steps for conceiving and authorizing new IS projects? What are the necessary administrative steps to obtain IS services? What is the rationale to prioritize new systems and services provided to users?	On a division level, desired projects are presented annually with an associated cost. Costs of implementing each solution are analyzed as well as the benefits related to customers. A requirements study is conducted and a list of IT necessities is compiled and prioritized according to hospital needs. Decisions are made through the joint efforts of Hospital Directors and Endowment, who analyze price, quality and compatibility. Each area's daily activities fall in line with upper management planning. Projects are defined by those that report an economic benefit for the hospital in regards to servicing the patient. The organization is in touch with the latest technology associated to the problems at hand. Development of new technologies has been done in-house and hiring of the people working on these projects has also been done internally. Systems have been updated according to the changing needs of the hospital

Appendix B (*continued*)

Concept	Research issues	Syntheses of interpretations
Skills (the acquisition of training, knowledge for managing and operating IS)	What are the skills and knowledge regarding IT of the current personnel? What is the rationale for hiring and training new personnel? What are the promotion and incentive systems?	The promotion systems follow the same guidelines as the police force and are strict and accomplished through years of experience. Monetary compensations are limited if non-existent. The training and sharpening of skills are realized outside of the organization, and usually sought out by the interested individual. Individual hiring preferences are base on the relationship one has with the police force as well as IT expertise. Before the undertaking of the strategic alignment initiative skills required were very basic, some were completely lacking interaction with technology

B.4. Winery

Concept	Research issues	Syntheses of interpretations
Applications (software and portfolio of applications, data bases)	How are the applications, systems and computer programs linked to strategic alignment initiatives or radical change?	There is a managerial decision to support the strategic objectives by implementing a corporate-wide information system. Likewise, the strategic alignment initiative also saw the value in implementing a support system that could provide real-time integration of the different areas within the Winery (distribution centers, wine production, central offices, branches, bottling plant, bodegas) and foster agility
Hardware (hardware configurations, networking, communication technology, technical infrastructure)	What is the rationale behind the current IT infrastructure? Who designed it? Who is responsible for making decisions regarding the new IT? Who designed the current IT infrastructure?	The IT infrastructure was designed by the IS Manager. The ubiquitous infrastructure was thought to provide flexibility for decision making on the spot and also allow the implementation of controls where decisions could be based on information rather than intuition. The infrastructure allowed for real-time information transfer to needed areas where daily sales information assisted to orient a dynamic strategy

(*continued on next page*)

Appendix B (*continued*)

Concept	Research issues	Syntheses of interpretations
IS processes (work processes related to the operations of the IS)	What are the necessary steps for conceiving and authorizing new IS projects? What are the necessary administrative steps to obtain IS services? What is the rationale to prioritize new systems and services provided to users?	The new system being implemented was compared against others available in the market, and the final decision was based on cost – which solution fit their budget. IS decisions regarding technologies used are made by the IS Manager. All infrastructure information, along with associated development costs, is passed to the Finance Administrator for approval. The need for IS services (hardware and software) is decided internally and then prioritized in weekly manager meetings. The selection of which systems to develop is taken by the Finance Administrator. Daily operations were decided and planned under IS Manager supervision. The decisions for the new IS projects were made considering the strategic mission of the General Manager to focus on Sales and Production
Skills (the acquisition of training, knowledge for managing and operating IS)	What are the skills and knowledge regarding IT of the current personnel? What is the rationale for hiring and training new personnel? What are the promotion and incentive systems?	A formal HR or recruitment process for the organization does not exist. HR initiatives are assumed by the family, which has been unable to provide the attention needed to create incentive, motivation, hiring, promotion and training programs. Hiring and promotion is initially done from within, and is mainly based on an individual's experience. Promotions are available only after employee request. Negative reinforcement systems, rather than incentive systems, are in place but are rarely known. Training is supported by the organization, but is never done in-house, and is pursued at employee request. The only incentive is a competitive salary

B.5. Private Hospital

Concept	Research issues	Syntheses of interpretations
Applications (software and portfolio of applications, data bases)	How are the applications, systems and computer programs linked to strategic alignment initiatives or radical change?	There are two types of applications, those that are administrative and support the business processes of the clinic, and those that are strategic. These strategic systems are those focused on supporting the medical needs of the clinic

Appendix B (*continued*)

Concept	Research issues	Syntheses of interpretations
Hardware (hardware configurations, networking, communication technology, technical infrastructure)	What is the rationale behind the current IT infrastructure? Who designed it? Who is responsible for making decisions regarding the new IT? Who designed the current IT infrastructure?	The principal design rationale for the current infrastructure was to support those technological functions of the clinic. The desire to unite disparate systems was to give the clinic flexibility and enable the exchange of data throughout the organization in order to make informative decisions
IS processes (work processes related to the operations of the IS)	What are the necessary steps for conceiving and authorizing new IS projects? What are the necessary administrative steps to obtain IS services? What is the rationale to prioritize new systems and services provided to users?	A project board exists with managers from areas such as operations and technology, administration and finance. From strategic planning, projects are decided upon and presented to the board. In this process, priorities are defined for each unit. The criteria that determine the priority are based on patient needs, and what implementations will have the greatest positive impact on the patient. The projects external users participate in the system's design, requirements, testing and implementation
Skills (the acquisition of training, knowledge for managing and operating IS)	What are the skills and knowledge regarding IT of the current personnel? What is the rationale for hiring and training new personnel? What are the promotion and incentive systems?	The criteria for hiring are based on the experience and formation of an individual. It is a formal process. Bonuses and raises are granted after a yearly evaluation based on criteria determined by HR. Professional credentials are fundamental for advances, but experience and competence are also highly valued

Appendix C. List of interviewees

See Fig. 1.

Position	Number of Interviews
Technological University	
School of Administration Director	1
Engineering Professor, Manager of Computation Laboratory	1
Director of Planning	1
Computation Administrator	1
Operations Manager	1
President	1
Commercial Engineering College Secretary	1
Public University	
Economic and Administrative Director	1
Vice-Dean	1
Administrative work, coordination, information systems	1
College of Economics and Administration Director	1
Computation Analyst	1
Dean	1
Computation and Analysis Department Director	1
Public Hospital	
Laboratory and Support Division Manager	1
Pediatrician	1
Assistant Medical Director	1
Division of Computation and Information Manager	1
Systems Engineer	1
Management Director	1
Computation and Information Division Analyst	1
Undurraga	
IS Manager	1
Treasurer	1
General Accountant	1
Administration and Finance Manager	1
Winery	
General Manager	1
CIO	1
Treasurer	1
Accountant (Contador General)	1
Private Hospital	
Operations and Technology Manager	1
Medical Director	1
Administration and Finance Manager	1
Total	32

Fig. 1. Frequency and positions of interviewees.

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