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Institutional dynamics in IT markets: extending the concept of organizing visions for IT innovations

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INSTITUTIONAL DYNAMICS IN IT MARKETS: EXTENDING THE CONCEPT OF ORGANIZING VISIONS FOR IT INNOVATIONS

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ABSTRACT

The concept of organizing visions for IT innovations, introduced by Swanson and Ramiller, offers a valuable analytical lens to examine institutional dynamics underlying diffusion of complex information technology (IT) innovations at the inter-organizational level of analysis. Several aspects of the organizing vision framework, however, warrant further elaboration. In this thesis, two such aspects are addressed. First, the process of organizing vision production and evolution is elucidated in more detail and embedded in the broader context of industry meaning structures. To this end, a process-oriented model is presented delineating how the development of an organizing vision is enabled and constrained by a variety of beliefs and logics situated in the adopter and vendor industries and, conversely, how the industry meaning structures may over time become altered by the unfolding evolution of the vision. Second, specific mechanisms enabling the legitimation function of organizing visions are identified and examined. The IT legitimation taxonomy comprising 26 discursive strategies for gaining and maintaining legitimacy for IT innovations is developed. The taxonomy integrates major conceptual views on legitimacy drawn from both organization theory and IS literatures. It is further refined and illustrated through a historical case study of Computerized Physician Order Entry (CPOE) systems, an IT innovation in the field of healthcare. 142 press releases issued by vendors of CPOE software, hardware and services from 1998 to 2005 are content-analyzed and a post-hoc analysis of temporal and cross-sectional patterns in the vendors' use of legitimation strategies is carried out. The contribution of this research lies in advancing the neo-institutional perspective on IT innovation and laying a foundation for extending the analysis of IT diffusion and use beyond the organizational boundaries.

CHAPTER 1: INTRODUCTION

RESEARCH MOTIVATION AND OBJECTIVES

Diffusion and assimilation of information technology (IT) innovations has been a key area of investigation within the IS research community for almost twenty years (for reviews see Fichman 2000; 2007, p. 590; Prescott and Conger 1995). While significant progress has been achieved in furthering our collective understanding of the phenomena, most of the insights were generated from within a single theoretical perspective. The 'dominant paradigm of IT innovation research' as (Fichman 2004) labels it, is deeply rooted in the rational-actor decision models. Most studies within this tradition are predicated on the idea that adopters make independent rational decisions directed by the goals of technical efficiency (Strang and Macy 2001). While such research has yielded major contributions to both theory and practice, a number of scholars have pointed out that the resulting models are "overrationalized" and fail to provide plausible explanations to such important diffusion phenomena as, for instance, the spread of technically inferior innovations (Abrahamson 1991) and sudden downturns in diffusion cycles (Abrahamson 1996; Strang and Macy 2001). Due to the limitations inherent in its fundamental assumptions and the sheer volume of studies accumulated within this research tradition, Fichman (2004, p. 315) suggests that the dominant paradigm may be reaching "the point of diminishing returns". In this vein, the opportunities for future influential work within this domain are contingent on the ability of IS researchers to step out of the tenets of the prevalent perspective and be willing to challenge its some of its fundamental assumptions.

In addition to being dominated by a single theoretical perspective, literature on IT innovation diffusion suffers from another limitation. The majority of studies within this body of research focus on individuals and organizations as the unit of analysis, while higher-level

diffusion processes (e.g., industry) have, as of now, received scant attention (Crowston and Myers 2004; Wang 2005). There are important reasons, however, why the conventional organization-level approach to studying IT innovations is no longer appropriate. In this regard, Wang (2005) notes that while implementation and assimilation of new technologies can be viewed as an organizational effort, making a decision to adopt the innovation increasingly involves interaction of the focal organization with a range of actors from the broader environment. This interaction takes a variety of forms and is driven, to a large extent, by the need of the adopter firm to acquire sufficient knowledge about the innovation before it can make the adoption decision (Attewell 1992). Furthermore, it has been argued that diffusion of IT innovations is shaped by conditions salient to a particular adopter industry; and, conversely, that core industry processes and institutions can be transformed by the spread of an IT innovation (Crowston and Myers 2004). To account for these important phenomena, IT innovation researchers need to extend their inquiries beyond the organizational boundaries and attend to pertinent inter-organizational factors and dynamics.

In order to address the two limitations of IS literature described above, in this thesis I seek to advance a promising, yet underresearched (Currie and Parikh 2005), line of inquiry that lies outside of the dominant paradigm of IT innovation research and focuses on the inter-organizational level of analysis. The core argument within this body of work posits that diffusion of IT innovations among organizations is enabled and shaped by the evolution of social beliefs about the innovation. These beliefs, termed organizing visions for IT innovations, constitute a "focal community idea for the application of an information technology in organizations" and are established, maintained, and transformed through community discourse (Swanson and Ramiller 1997, p. 459). Community in this context represents a collective of organizations with diverse

and sometimes conflicting interests in the focal IT innovation. Within the community, organizing visions perform three broad functions of interpretation, legitimation, and mobilization that together facilitate the spread of IT innovations.

Fundamentally, this view of innovation diffusion draws upon the tenets of the neo-institutional perspective in sociology and organization theory (DiMaggio and Powell 1983; Meyer and Rowan 1977). The neo-institutional perspective stresses the centrality of "shared conceptions that constitute the nature of social reality and the frames through which meaning is made" (Scott 2001). These conceptions usually take the form of taken-for-granted beliefs, models, schemas, and scripts that project their power on social actors by delineating a common system of meaning that guides everyday behavior and decision-making (Meyer and Rowan 1977; Zucker 1977). The emergence and endurance of such beliefs are achieved through ongoing socialization and interaction among the actors (DiMaggio and Powell 1983). In this light, an organizing vision can be viewed as a shared cognitive structure underlying the meaning of a particular IT innovation within an organizational community. As such, it shapes decisions and actions of the constituent social actors in regard to the focal innovation. Like other inter-organizational cognitive structures, organizing visions undergo transformation and evolution and may eventually become take-for-granted. This evolutionary development, however, does not take place in a vacuum but rather is influenced by other industry-level beliefs, norms, and logics. Given the complexity of today's IT innovations and the degree of interconnectedness among potential adopters, vendors, and field-level actors, I argue that attending to the role of these socio-cognitive dynamics in facilitating innovation diffusion dynamics at the inter-organizational level of analysis, offers fertile research avenues outside of the dominant economic paradigm.

While, as argued above, the organizing vision framework (Swanson and Ramiller 1997) offers a sound conceptual foundation and rich analytical context for advancing research into IT innovation diffusion, several aspects of the framework warrant further elaboration if its full potential is to be realized. Two such aspects are addressed in this thesis. First, I posit that the process of organizing vision production and evolution needs to be elucidated in more detail and embedded in the broader context of industry meaning structures. To this end, my first objective is to develop a process-oriented model delineating how the evolution of organizing visions for IT innovations is enabled and constrained by the taken-for-granted beliefs and logics situated in the adopter industries; and how the maturation of the vision may lead to the transformation of industry-level structures. Second, I argue that specific mechanisms that underlie the three main functions performed by organizing visions, *viz.*, interpretation, legitimation, and mobilization, must be examined more closely. In this vein, my second objective is to explore the underpinnings of the legitimation function of organizing visions and construct a framework explicating key strategies employed by IT entrepreneurs to gain and maintain legitimacy for IT innovations. While my research is confined to legitimation I demonstrate that it has important implications for the other two functions of organizing visions.

THESIS STRUCTURE

The thesis is organized as follows. In the remaining section of this chapter I discuss key assumptions, propositions, and limitations of the major conceptual approaches to innovation diffusion, *viz.*, rational-actor perspective, institutional perspective, and relational models. Understanding the foundations of these perspectives is important insofar as I will draw upon their terminology and key claims throughout the thesis. In Chapter 2, I address the first research objective of the thesis. Specifically, I develop and elaborate a comprehensive process-oriented

model aimed at capturing the interaction between organizing visions for IT innovations and industry meaning structures. I draw on the existing literature on organizing visions to offer empirical illustration of the model. I also discuss the implications of the above interaction for the vendor and adopter industries as well as consider its impact on diffusion paths of the focal IT innovation. Next, Chapters 3 and 4 concern the second research objective of the thesis. In Chapter 3, I lay a conceptual foundation for furthering our understanding of the legitimation function of organization visions. To this end, I review and synthesize major conceptual views on legitimacy from organization theory and describe how these views are reflected in the organizing visions literature. In Chapter 4, I refine my findings from the literature analysis by conducting an exploratory case study of the vendor discourse surrounding an IT innovation in the field of healthcare. Based on the case study, I construct a taxonomy of discursive strategies aimed at building legitimacy for IT innovations; I also carry out a number of post-hoc analyses to assess explanatory power of the proposed taxonomy. Finally, I conclude the thesis in Chapter 5 with a discussion of key contributions and future directions of my research.

REVIEW OF MACRO-LEVEL DIFFUSION RESEARCH

Diffusion, in the broadest sense, can be defined as a spread of an element, usually referred to as "practice", within a social system (Strang and Soule 1998). The diffusing element might be a behavior, strategy, belief, structure, organizational form, or technology. Diffusion of new practices, often called innovations, has traditionally been ascribed with special significance due to their presumed role in propelling sustained economic growth (Kimberly 1981). The importance of innovations along with the ubiquity of diffusion processes resulted in an extensive body of knowledge accumulated on the phenomenon of innovation diffusion with contributions made by a variety of social science disciplines (Rogers 1995; Strang and Soule 1998). At the

highest level, three lines of argument dominating the classic literature on diffusion can be identified, *viz.*, rational-actor perspective, institutional perspective, and relational models (Lounsbury 2003; Strang and Macy 2001). Below I outline major propositions, underlying assumptions, and limitations of the rational-actor and institutional paradigms. I also touch upon the state of IS research within each paradigm whenever appropriate. Finally, I briefly discuss the relational models and explain why this approach is less relevant for the research presented in this thesis.

Rational Actor Perspective

Major Propositions, Assumptions, and Limitations

The rational-actor (a.k.a., rational choice, choice-theoretic) perspective on macro-level diffusion processes is grounded in studies concerning adoption of fairly simple technical innovations by autonomous individuals (Fichman 2000; Rogers 1995). In general, research within this tradition is predicated on the idea that adopters make independent, rational choices directed by goals of technical efficiency. Accordingly, proponents of this approach direct their efforts at studying how social actors evaluate alternative innovative practices and benefits associated with them in making optimal adoption decisions (Geroski 2000), as well as examining the impact of various factors within the context of rational decision-making on the rate, pattern, and extent of innovation diffusion (Fichman 2000). Two fundamental assumptions underlie rational-actor diffusion models: (1) potential adopters can clearly formulate their goals and are capable of assessing how efficient new practices will be in attaining those goals, and (2) social actors make adoption decisions in an independent fashion (March 1978).

While the rational-actor perspective has yielded significant contributions to both the theoretical body of knowledge accumulated on the subject and the practical understanding of

how to facilitate and promote diffusion of new practices, a number of scholars have pointed out that its assumptions render the resulting models "overrationalized" and fail to account for institutional and technical complexities of modern organizational environments (Abrahamson 1991; Lounsbury 2003; Strang and Soule 1998). In IS, for instance, a variety of recent developments, ranging from the growth of inter-organizational information systems to the enactment of the Sarbanes-Oxley Act, would seem to challenge the proposition that organizations make independent adoption decisions. In addition, the pervasiveness of information technologies in enabling business processes coupled with the complexities of corporate IT infrastructures makes it virtually impossible for decision makers to be able to objectively assess the potential business value of an IS innovation.

State of IS Research

The rational-actor perspective has enjoyed great popularity among innovation diffusion researchers across a variety of social science disciplines. In mainstream IS research, it seems to have attained the status of a dominant research paradigm (Fichman 2004) with just a handful of studies carried out from alternative vantage points. Most of the studies within this research tradition fall under one of the two general categories: (1) adopter studies and (2) diffusion modeling studies (Fichman 2000). The former focuses on how different characteristics of social actors (individual or organizational), their environments, and the innovation itself affect adopters' degree of "innovativeness", usually operationalized as propensity to adopt innovations, timing of the adoption decision, and the extent of subsequent innovation assimilation. Diffusion modeling studies, on the other hand, are concerned with the factors that determine the rate, pattern and extent of innovation diffusion and assimilation across a population of potential adopters. A number of excellent reviews of the rational-actor innovation diffusion research are

available in the literature and should be consulted for further details (Fichman 2000; Prescott and Conger 1995; Swanson 1994).

Institutional Perspective

Major Propositions, Assumptions, and Limitations

Institutional accounts of diffusion emerged from sociology in the late 1970s and early 1980s and are based on theories concerning the impact of broader scale socially constructed scripts and models on actions and behaviors of collective and individual actors (DiMaggio and Powell 1983; Meyer and Rowan 1977). Traditionally, this stream of research has been concerned with investigating the spread of structural forms and practices across populations of social collectivities, rather than adoption of technical innovations by individuals (Strang and Soule 1998). The notion of legitimacy, defined as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman 1995, p. 574), comprises the core argument in institutional theory and underpins institutional explanations of diffusion. According to this perspective, for a practice to spread across a community of social actors, it first has to be granted legitimacy by members of that. As the degree of legitimation grows, institutional forces will drive the population toward the state of isomorphism, or homogenization, with respect to the diffusing practice (DiMaggio and Powell 1983; Tolbert and Zucker 1983).

The classic typology of forces enabling adoption of new practices and forms posits three major mechanisms, *viz.*, coercive, normative, and mimetic (DiMaggio and Powell 1983). These mechanisms are associated, respectively, with the three types of institutions, *viz.*, regulative, normative, and cultural-cognitive. Each of the three institutional pillars, as Scott (2001) refers to them, provides a different basis for the production of legitimacy. I discuss these bases next.

Regulative institutions facilitate diffusion by imposing coercive pressures on potential adopters and forcing them to comply with relevant legal and quasi-legal rules and requirements. Legitimacy in this case is a function of compliance; and the rate of diffusion is determined by the power of the coercive agent (Scott 2001). In the context of information technology, examples of regulative institutions include policies and directives passed by government and/or international authorities with regard to production and use of IS innovations (Jang and Luo 2000; King et al. 1994), technological standards, and pressures imposed by resource-dominant organizations, such as powerful retailers and manufacturers, on their business partners to adopt inter-organizational information systems (Teo et al. 2003). *Normative institutions*, on the other hand, invoke diffusion by producing legitimacy that stresses appropriateness of the diffusing practice in the context of moral norms, values, and expectations (Scott 2001). Professional and collegial networks often become primary relational carriers propagating this type of pressure (DiMaggio and Powell 1983). Diffusion of IS innovations, in this vein, may be influenced by the norms prevalent among members of the user profession (e.g., respect for privacy of personal health information in medical professions) as well as by the broader pro-social logics (e.g., value of human life, societal welfare etc.) shared by actors in the wider society. Finally, *cultural-cognitive institutions* emphasize the importance of shared systems of meaning in determining what actions are possible and what has meaning (Zucker 1983, p. 2). Legitimacy, in this case, is predicated on cognitive consistency, or the degree of fit, between the new practice and the existing objectified social conventions (Scott 2001).

The stream of work in institutional theory focusing on the role of cultural-cognitive elements has come to be known as neo-institutionalism (Scott 2001). Historically, neo-institutional theorists have contributed the most to advancing the understanding of diffusion

phenomena. Early neo-institutional accounts of diffusion were dominated by the classical contagion model proposed by Tolbert and Zucker (1983). This model posits that diffusion of new practices unfolds in two stages characterized by different adoption rationales. In stage one, early adopters are driven by considerations of technical benefits that an innovation is expected to provide at the local level. In stage two, "later adopters simply imitate each other in a contagion-like process that is decoupled from rational calculations" (Lounsbury 2003, p. 4). The shift in adoption rationales is presumed to be due to the changing strength in legitimacy of the diffusing practice that increases as a function of prior adoption (Meyer and Rowan 1977; Tolbert and Zucker 1983). In other words, as the density of the adopter organizations within the population increases, the practice becomes increasingly seen as a natural way of organizing. This, in turn, spurs further diffusion by escalating mimetic pressures on the non-adopters to seek structural isomorphism with the rest of the community[1]. The above dynamic is usually reinforced under the conditions of technological and/or environmental ambiguity (DiMaggio and Powell 1983).

If the rational-actor perspective, as pointed out earlier, advocates "over-rationalized" conceptualizations of diffusion processes, the contagion model described above was criticized as "under-rationalized" (Lounsbury et al. 2003; Strang and Macy 2001). In particular, by rendering homogeneity of inter-organizational fields as a product of an isomorphic organizational response to monolithic institutional forces, the contagion model removes the complexity of organizational action from the field-level diffusion models (Hoffman 2001). To overcome this limitation, in their later work neo-institutional theorists shifted attention away from density-dependent mimesis and focused on the role of theorization in fostering legitimacy and, ultimately, promoting the spread of new practices among organizations (Greenwood et al. 2002; Strang and

[1] In this vein, Meyer and Rowan (1977) noted that as an innovation spreads, a threshold is reached beyond which adoption provides legitimacy rather than improves performance.

Meyer 1993; Tolbert and Zucker 1996). Theorization, defined as the development of cultural justifications that "simplify and distill the properties of new practices and explain the outcomes they produce" (Greenwood et al. 2002, p. 60) is carried out by self-conscious actors seeking to promulgate the innovation (Strang and Meyer 1993). Legitimacy, in this vein, derives from the persuasiveness of cultural accounts, which in turn is determined by how well the accounts mesh with the belief systems salient to potential adopters (Powell and DiMaggio 1991). By emphasizing the purposeful nature of theorization construction and the evaluative nature of legitimacy, this view reestablished the importance of social action in diffusion and overcomes the aforementioned limitations of the early contagion models. In this thesis, I draw heavily on the literature concerning the role of theorization and theorization-like dynamics in innovation diffusion.

State of IS Research

Although several authors have argued for wider use of institutional theory in studying IT diffusion and adoption in organizations (Crowston and Myers 2004; Orlikowski and Barley 2001; Robey and Boudreau 1999), such research remains fairly sparse compared to the literature based on the rational-actor perspective. Nonetheless, a number of important conceptual contributions (King et al. 2004) and insightful empirical investigations (Chatterjee et al. 2002; Damsgaard and Lyytinen 2001; Teo et al. 2003; Tingling and Parent 2004) have been carried out within this paradigm. These studies explored a variety of institutional factors and influences affecting diffusion and assimilation of IT innovations but did not explicitly attend to the role of cultural-cognitive institutions and theorization dynamics in shaping the innovation process. In addition to the above studies, a small but distinct body of IS literature that does take a neo-institutional view of IT innovation diffusion has coalesced around the concept of organizing

visions (Swanson and Ramiller 1997). So far as this literature is central to my research, I review it in more detail below.

Conceptual foundations for this line of thought were laid in the seminal work by Swanson and Ramiller (1997) who justified the importance of organizing visions, delineated their major functions, and identified key processes involved in the vision production and evolution. The follow up research extended the original conceptualization in several directions. Ramiller and Swanson (2003) identified key underlying dimensions of how executives respond to organizing vision discourse and offered conjectures concerning the role of these dimensions in shaping career paths of organizing visions. Wang and Ramiller (2004) explored the organizing vision of enterprise resource planning systems and argued that the focus of the vision discourse shifts over time in response to changing knowledge needs of the organizational community. Finally, Wang and Swanson (2007) in a study of a failed innovation of professional services automation demonstrated the role of institutional entrepreneurship in launching visions for IT innovations.

In addition, a number of empirical investigations employed the organizing vision framework as a research lens to better understand diffusion trajectories of different IT innovations. These studies included examinations of the organizing visions for customer relationship management systems (Firth 2001), application service provisioning (Currie 2004), and electronic medical records (Davidson and Reardon 2005). Unlike the papers described in the previous paragraph, this research did not aim to elaborate on the original tenets of the framework. Finally, two conceptual essays on topics closely related to organizing visions warrant attention. The first essay (Swanson and Ramiller 2004) distinguishes between mindful and mindless approaches to innovating with IT. It discusses the implications of the two approaches for the focal organization, and suggests a number of factors determining prevalence of

mindfulness or mindlessness across firms. The second essay by Ramiller (2006) considers the role of exaggeration in IT innovation diffusion. It establishes the prominence of the exaggeration phenomenon in today's world of information technology, explicates the key functions that exaggeration fulfills, and outlines main 'species', or rhetorical foci, of exaggeration. I believe that the ideas from these two essays will eventually find their way into research on organizing visions.

Relational Models

The third research avenue that has been explored by diffusion theorists can be loosely labeled as relational models. This approach seeks to explain the spread of a diffusing practice by evaluating network connections and structures through which information and influence flow among the actors within an adopter community, as well as across the communities. Classical arguments within this research stream include cohesion through strong ties (Davis 1967), spread of "news" through weak ties (Granovetter 1973), and competition through structural equivalence (Burt 1987).

Despite its significance in the classic diffusion literature, the relational approach is less relevant to the research objectives I seek to address in this thesis. Most relational studies do not address the issue of how adoption decisions are made or what practices are likely to diffuse (Lounsbury et al. 2003) but merely consider the effect of relational configurations (however these are defined) on diffusion rates. In this sense, while the rational-actor and neo-institutional arguments can be viewed as forming a continuum reflecting the importance of either technical considerations or institutional pressures in adoption decision-making, the relational perspective comprises an orthogonal dimension that can complement either one of the decision-making alternatives. In addition, as Strang and Meyer (1993) showed, relational models are more

appropriate when studying diffusion of an object that is asocial in nature (such as for example, the spread of a disease). When the diffusing object is socially constructed (such as IT innovations), cultural linkages and theorization play a much greater role in determining the innovation's destiny. Due to these reasons I do not discuss the literature on relational models here.

CHAPTER 2: ORGANIZING VISIONS FOR IT INNOVATIONS AND INDUSTRY BELIEF SYSTEMS

IT INNOVATION DIFFUSION AND INDUSTRY

A number of recent articles in leading IS journals have called for extending the scope of IS research beyond organizational boundaries to incorporate industry-level factors and dynamics to generate new theoretical models (Agarwal and Lucas 2005; Chiasson and Davidson 2005; Crowston and Myers 2004). While pointing to the overall historical scarcity of industry-level research in IS, these papers posit that the relationship between industry and IT does indeed have significant implications for both, and therefore should not be overlooked. This suggests that a comprehensive research program aimed at investigating various aspects of the interaction between information technology and industry-level concerns needs to be developed within IS. In this chapter I seek to take a first step in this direction and argue that a key element central to the development of such a research program is IT innovation diffusion. Studying the processes of IT innovation diffusion in the context of the IT-industry relationship is warranted, in my opinion, for several reasons.

First, both Agarwal and Lucas (2005) and Crowston and Myers (Crowston and Myers) point out that advanced information technologies have a potential to foster profound transformational effects involving not only individual organizations but entire industries. For example, the spread of Computerized Reservation Systems (CRS) applications has dramatically changed the landscape of the travel agent and airline industries (Lewis et al. 1998). As the example shows, these transformations are typically brought about by the diffusion of a complex IT innovation into a population of organizations that adopt and assimilate the technology into their core business processes. Thus, these two processes, *viz*., technology diffusion and industry

change, are closely intertwined and interdependent as they unfold over time. This temporal interplay can be fruitfully examined to gain insight into how, over time, the spread of an IT innovation may lead to shifts in structures governing the adopter industries.

Second, insofar as the majority of IT products and services today are not developed in-house, but obtained by the adopter firms through either procurement of packaged solutions or outsourcing, I argue that research on IT innovation diffusion needs to attend more closely to the dynamics of the IT marketplace. These dynamics are inherently inter-organizational and unfold through the interaction of organizational actors representing different industries and market communities. The emergence and evolution of IT markets, in this view, is critical to the identity, competitive strategies, and performance metrics of the organizations that design, produce, and propagate the innovations, namely IT providers and vendors. For example, the Gartner Group compiles its widely used 'Magic Quadrants' reports based on an evaluation of vendors' visions, competencies, and ability to execute within a specific market space. Hence, exploring the link between IT innovation diffusion and the development of IT markets allows for extending the analysis of macro-level impacts of IT into the domain of vendor industries.

Finally, design of IT innovations and their diffusion paths are shaped by factors and conditions salient to a particular adopter industry. The significance of such industry influences is evident in the fact that many IT vendors develop versions of their software packages aimed at specific adopter industries (Crowston and Myers 2004). For example, the website of SAP, a leading ERP vendor, provides a list of more than twenty five industry-specific solutions, ranging from healthcare to banking to aerospace and defense. By the same token, the inability of vendors to explicitly identify a target industry and tailor their offerings to its needs and demands often results in the overall failure of the innovation. Attempts by the technology companies to position

Application Service Provisioning (ASP) as a "one-size-fits-all" type solution, for example, have led to a wide-spread abandonment of the concept (Currie 2004). Thus, by accounting for industry-level influences on the process of IT innovation diffusion, I hope to offer new insights into how and why some IT innovations successfully diffuse in particular industry settings while others do not.

Whilst a number of researchers have pointed out the importance of studying innovation diffusion beyond organizational boundaries (Wang 2005), the extant IS literature on the subject continues to be dominated by research focusing on individuals or organizations as the unit of analysis, not industry. Furthermore, as I will show later, the existing frameworks that do take an inter-organizational view of IT innovation diffusion fall short of explicitly addressing the embeddedness of this process in the industry-specific concerns. Consequently, the objective I pursue in this chapter is to develop an analytical model explicating key elements and dynamics of the interaction between structures at the industry-level of analysis and the process of IT innovation diffusion and to suggest how this model might be applied in IS. In developing the model, I take a *cultural-cognitive*[2] perspective[3] on the relationship between industry and information technology (Crowston and Myers 2004) and accordingly name the model ***C**ultural-**C**ognitive **M**odel of **IT**-**I**ndustry **I**nteraction (CCMITII)*. In order to establish key elements within the two constitutive domains of the model, i.e., the domain of industry and the domain of information technology, I draw upon two distinct bodies of literature identified below.

[2] While Crowston and Myers (2004) differentiate between 'institutional' and 'socio-cultural' perspectives, I believe that the two should be viewed as facets of a broad theoretical approach derived from institutional theory. Scott (2001) defines institutional structures as encompassing three pillars: regulative, normative, and cultural-cognitive. In this light, Crowston and Myers's definition of the 'institutional' perspective, as focused on legal and regulatory arrangements governing an industry, seems to correspond closely to the regulative pillar of the Scott typology. Similarly, the 'socio-cultural' perspective, described by Crowston and Myers as concerning social relationships, beliefs, norms and values, appears to be conceptually equivalent to the cultural-cognitive institutional pillar, as defined by Scott (2001). Because of its wide acceptance among social science researchers, I will use the term 'cultural-cognitive' to describe our view of the IT-industry interaction phenomenon.

[3] See discussion in Chapter 1 for more detail on the cultural-cognitive (a.k.a. neo-institutional) perspective.

First, to conceptualize the *domain of information technology* I build upon the framework of organizing visions for IT innovations (Swanson and Ramiller 1997) that was introduced in the previous chapter. Second, I employ the literature on industry beliefs and logics (Lounsbury 2003; Lounsbury et al. 2003; Porac et al. 2002) originating in neo-institutional and inter-organizational cognition research to operationalize the *domain of industry* of the model. This body of knowledge emphasizes the central role of collective cognitive structures in enabling strategic choices and interactions among organizations in competitive environments (Porac et al. 2002).

Whilst research on 'organizing visions' offers rich insight into the socio-cognitive underpinnings of technology entrepreneurship and adoption decision-making, it does not explicitly address the embeddedness of these dynamics in the higher-order industry belief structures. By the same token, although organizational and strategy researchers have demonstrated the fundamental importance of industry beliefs and/or 'logics'[4] in enabling and constraining behaviors and decisions of organizations, they seem to overlook the fact that many of these logics today are interwoven in sophisticated information technologies (Piccoli and Ives 2005). Hence, this research stream leaves out the notion of technology-triggered industry change. By integrating the two bodies of literature into a single process-oriented model, I seek to provide a comprehensive view of the cultural-cognitive aspects of the interaction between the processes of IT innovation diffusion and the evolution of industry meaning structures. This I believe allows for new insights into the three broad research problems outlined above: *viz.* (1) how diffusion of IT innovations enables transformations of adopter industries; (2) how it shapes IT markets and subsequently structures of the IT vendor industries; and (3) how industry-specific factors influence outcomes of IT innovation diffusion in a particular adopter industry.

[4] Logics, in this context, can be viewed as a special type of collective beliefs that provide members of an organizational community with a "status ordering for practices that deem some practices as more appropriate than others" (Lounsbury 2003, p. 77).

The remainder of this chapter is organized as follows. First, I explicate the levels of analysis involved in the development of CCMITII. Next, I review key concepts from the two reference literatures informing this research and establish major elements within the two constitutive model domains, viz., the domain of industry and the domain of information technology. Finally, I introduce the concept of organizing vision lifecycle and integrate the two domains construct CCMITII.

LEVELS OF ANALYSIS

So far as the term 'industry' comprises a significant part of the model developed in this chapter, I would like to define at the outset what I mean by 'industry' and clarify how it relates to the multiple levels of analysis involved in the subsequent discussion. In explicating these matters I draw upon a theoretical framework for institutional analysis formulated by Scott (2000).

In accordance with Scott's framework, CCMITII encompasses two interorganizational levels of analysis, namely the level of organizational field and the level of organizational population. The concept of organizational field has been widely used in the organization theory literature (DiMaggio and Powell 1983; Scott 2000) and traditionally defined as "a community of organizations that partakes a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field" (Scott 2001, p. 86). In other words, the classic conception posits that organizational fields "constitute a recognized area of institutional life" (DiMaggio and Powell 1983, p. 143) and, thus, are formed around common technologies, products, or markets. An alternative viewpoint complements the conventional definition by rendering organizational fields in a more political light. In particular, it argues that fields are centered "around the issues that become important to the interests and objectives of a specific collective of organizations" (Hoffman 1999, p. 352). In this '*issue-based'*

view of organizational fields, they "become arenas of power relations where multiple field constituents compete over the definition of issues and the form of institutions that will guide organizational behavior" (Hoffman 1999, p. 352). Despite the differences, the two perspectives should be viewed as complementary rather than mutually exclusive insofar as the field boundaries established under the conventional view often closely correspond to the boundaries under the issue-based view[5]. In general, however, conceptualizing an organizational field "as centered around issues rather than networks reveals greater complexity in field formation and evolution" (Hoffman 1999).

From a hierarchical standpoint, organizational fields are seen as comprised of organizational populations, which in turn are made up of organizational actors, or simply organizations[6]. The concept of organizational population, or a "class(es) of organizations that are relatively homogeneous in terms of environmental vulnerability" (Hannan and Freeman 1977, p. 166), captures a more traditional notion of *industry* that I took up in the introductory section of this chapter. In an issue-based organizational field, organizational populations are also viewed as carriers of industry-specific institutional beliefs and perceptions, '*situated institutions*' that shape and are shaped by the field-level debate (Hoffman 1999)[7].

In this thesis I emphasize the issue-based conception of organizational fields and argue that the IT-industry interaction dynamics need to be studied at both the organizational field and

[5] Indeed, the field-level debates usually revolve around the issues pertinent to organizations participating in a specific product or service market; nonetheless, they may also engage social actors traditionally not associated with this sector of institutional life, such as for instance social movement organizations.

[6] In general, organizations belong to a single organizational population but may participate in multiple organizational fields. In this respect, the third level of organizational analysis is that of an organization set which encompasses "the focal organization together with its relations to other organizations that are critical to its functioning and survival" (Scott 2000, p. 10).

[7] The field of healthcare, for example, encompasses the populations (or industries) of healthcare providers (medical groups/networks, hospitals, healthcare systems), purchasers (individuals, employers, government programs), professional associations, governmental public agencies, and intermediaries (insurance companies, vendors) (Scott 2000). In this example, healthcare providers and health insurance companies most certainly have quite different understandings of the environments; nonetheless through participation in the same organizational field they may exercise influence on each other's situated institutions.

the organizational population levels[8]. An organizational field, in this context, is formed around a focal IT innovation and encompasses a variety of organizational populations which join the field in order to realize their interests in various aspects of the innovation process. The two most prominent groups within the field usually represent IT vendors and providers (i.e., *producer populations*) and potential adopters of the innovation (i.e., *consumer populations*). In this view, the impact of industry on IT arises as an outcome of the field-level debate shaped by the interaction among the institutions situated within the individual populations inhabiting the field. To capture this interaction, researchers need to design their studies at the organizational field level of analysis. On the other hand, the impact of IT on industry is best examined at the organizational population level. Because IT innovations diffuse into individual adopter populations, their transformational impact may vary significantly from one industry to another. In addition, such an approach will allow the exploring of the structuring effects of IT innovation diffusion on the producer populations of IT vendors and providers.

THE DOMAIN OF INFORMATION TECHNOLOGY

Organizing Visions for IT Innovations

To establish the information technology domain of the model I draw upon the framework of organizing visions for IT innovations (Swanson and Ramiller 1997). As pointed out above, CCMITII is conceptualized at the level of an organizational field formed around the issue of what an IT innovation is and how it can be applied to benefit adopter organizations. Similarly, organizing visions have been defined as shared understandings of an organizational application of information technology innovations that are established, maintained, and transformed through

[8] I use the term IT-industry interaction throughout the paper in order to be consistent with the previous IS literature which coined the term (Crowston and Myers 2004; Chiasson and Davidson 2005). It should not be interpreted, however, as confined to a specific industry but rather looked at in a broad sense to describe the interaction between an IT innovation and social structures operating at the interorganizational level.

community discourse (Swanson and Ramiller 1997). Community, in this case, represents a collective of organizations with diverse and often conflicting interests in the focal IT innovation. They engage in discourse in order to make sense of (in case of the consumer organizations) or promote (in case of the producer organizations) the innovation as a strategic organizing opportunity. Hence, an organizing vision discourse community is largely congruent with the notion of an issue-based organizational field (Hoffman 1999) wherein the evolving organizing vision provides a core around which the participating organizational populations and field-level actors coalesce.

Within the community, organizing visions perform three broad functions, *viz*. interpretation, legitimation, and mobilization, which together facilitate and shape diffusion of new practices (Swanson and Ramiller 1997). (1) *Interpretation:* by creating a vision an adopter community provides its members with a rationalized frame of reference that "explains the innovation's existence relative to its broader social, technical and economic context" (Swanson and Ramiller 1997, p. 460). (2) *Legitimation:* legitimacy, according to Swanson and Ramiller (1997), is not directly linked to density or mimesis (Tolbert and Zucker 1983), but rather achieved by grounding the technology in broader business concerns and demonstrating its relevance to prominent organizational needs. (3) *Mobilization:* organizing visions help to activate, motivate and coordinate activities of various parties that provide technical, service and knowledge support to prospective adopters of an IT innovation.

A number of organizational field-level processes are involved in the production and evolution of organizing visions (see Figure 1). The vision is in the first place a discursive entity: it is created through the *discourse* of social actors representing heterogeneous organizational populations (box 3) who join the *community* (box 4) due to their vested interest in various

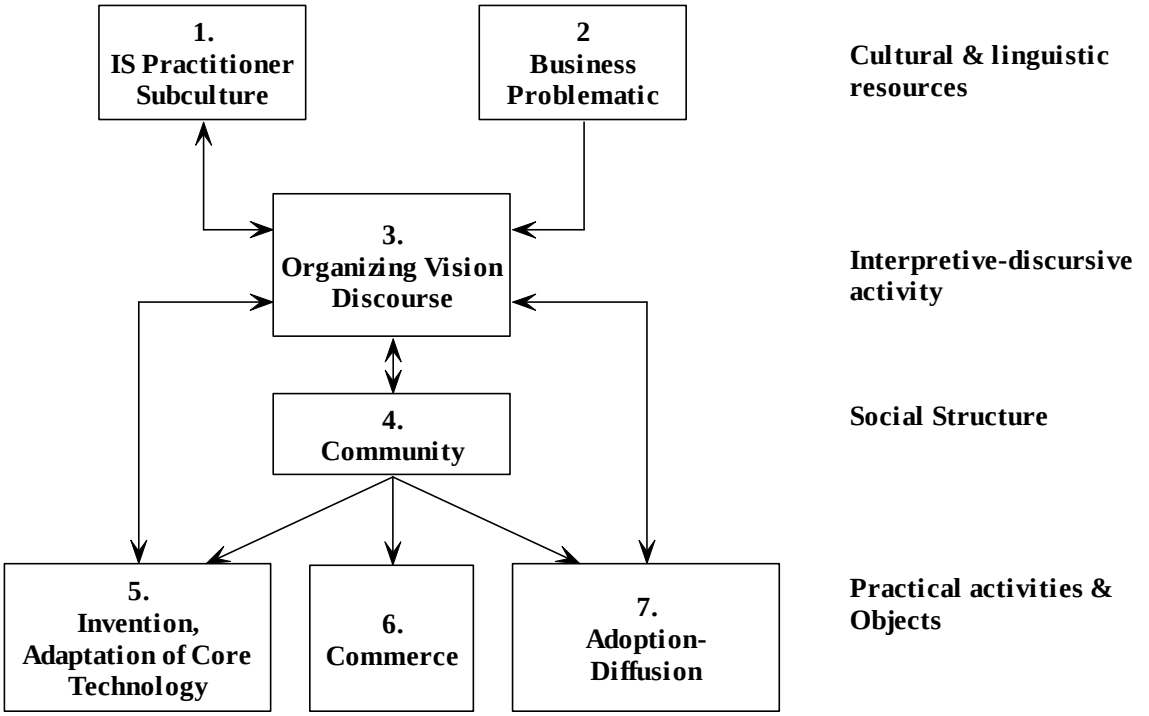

Figure 1: Production of Organizing Visions (Swanson and Ramiller 1997)

aspects of the innovation lifecycle. The discourse is dynamic in nature as it is constantly shaped by a wide range of supporting and contesting texts proffered by field constituents. These texts reflect the underlying processes and outcomes of *adoption/diffusion* of the innovation (box 7), *invention and adaptation of the core technology* (box 5), as well as the *commerce* activities (box 4). The discursive struggle takes place within a common framework of meaning provided by the organizing vision itself and drawn from higher-level structures of the *business problematic* (box 2) and the *IS practitioner subculture* (box 1). Thus, organizing visions simultaneously constitute the process whereby social actors within the field construct the meaning of the innovation and communicate about it, and yet they are themselves a product of that communication.

Limitations of the Organizing Vision Framework

As exemplified by a number of recent empirical investigations (Currie 2004; Davidson and Reardon 2005; Firth 2001; Wang and Ramiller 2004; Wang and Swanson 2007), the organizing

vision framework has proven to offer a solid conceptual foundation from which to advance our understanding of the IT innovation diffusion phenomena. I argue, however, that the analytical potential of the framework can be further realized by extending its scope to reflect the interaction between information technology and industry. To this end, two limitations present in the current conceptualization of the organizing vision framework need to be addressed. First, researchers must explicitly attend to the role of social beliefs constituting the visions in shaping behavior and cognition of social actors within the field. Second, the process of organizing vision production and evolution should be brought into the context of higher-order industry meaning structures governing organizational populations involved in the discourse. Below I elaborate on these ideas.

First, I argue that the organizing vision concept is intrinsically dual in nature and both of its facets warrant equal research attention. The duality stems from the two distinct elements embedded in its definition. Organizing visions are focal community ideas that are fashioned, maintained, and transformed over time via private and public discourse. Thus, on the one hand, the visions are meaning structures or beliefs shared by a community of social actors (i.e., focal community idea), while on the other, they form an action arena where the struggle over the production of mobilizing and counter-mobilizing ideas and meanings unfolds (i.e., public and private discourse). While the original conceptualization of organizing visions provided by Swanson and Ramiller (1997) clearly suggests this duality, the subsequent elaboration of their framework seems to blur the distinction and shift the emphasis toward the discourse component.

The blurring, in my opinion, becomes most evident in the discussion of the concept of career dynamics of organizing visions (Ramiller and Swanson 2003; Swanson and Ramiller 1997), which reflects the evolution of the organizing vision discourse over time.

> "That rhetoric (organizing vision discourse) may strengthen or weaken, becoming more a less compelling, at various points in an organizing vision's career, as the content of

> the discourse evolves and the influence of the voices behind it surges and wanes" (Swanson and Ramiller 1997, p. 469).

Despite having outlined three potential outcomes of the organizing vision career, namely fading, blending with other organizing visions, and converging around an institutionalized innovation, Swanson and Ramiller suggest that, regardless of the outcome, an organizing vision somehow eventually ceases its existence as the community's need for sense-making tapers off and the constitutive discourse slips away:

> "Regardless of whether the final outcome is abandonment or institutionalization, the organizing vision's ultimate fate is to be collectively "forgotten"…either having been discredited…, or having become an important and yet unremarkable portion of everyday landscape"(Swanson and Ramiller 1997, p. 469).

Such a perspective, however, seems to reduce the analytical scope of the framework as it fails to capture the progression in structural properties of organizing visions, which, as I will show later, have important ramifications for the populations of producers and consumers of the focal IT innovation. While the discourse may indeed "eventually come(s) to lose its fervor and energy" (Ramiller and Swanson 2003, p. 16), the shared community beliefs emerging out of it often persist and shape cognition and behavior of organizational actors within the field (Clemens and Cook 1999). These meaning structures undergo constant recalibration (Rosa et al. 1999) that may lead to an abandonment, but also, in some instances, entail their increasing stabilization and possibly eventual institutionalization. The latter, in turn, often engenders technology-triggered shifts in situated institutions governing organizational populations comprising the field. For example, although the organizing vision generative discourse on ERP has largely subsided (Wang and Ramiller 2004), the shared market beliefs constituting the ERP vision seem to continue to play an important sense-making role for organizational actors in the consumer populations. This is best evidenced in the fact that ERP implementation announcements have a

positive effect on financial analysts' earnings predictions for the announcing firms (Hunton et al. 2002).

Hence, in light of the above discussion, I contend that in order to gain a deeper understanding of organizing visions of IT innovations and their impact on the producer and consumer populations, it is imperative to attend to both constitutive elements of the organizing vision concept, namely organizing vision beliefs (i.e., *organizing vision structure*) and organizing vision generative discourse (i.e., *organizing vision discourse*). Accordingly, later in the chapter I introduce the notion of an organizing vision lifecycle which extends the scope of the organizing vision career to account for the evolutionary changes in properties of both of the aforementioned elements.

The second limitation of the organizing vision framework concerns the conceptual disconnect between the process of organizing vision production and evolution and the belief systems situated in organizational populations partaking in the organizing vision discourse. Whilst a number of studies have identified categories of actors that make up the discourse community (Currie 2004; Davidson and Reardon 2005; Wang and Ramiller 2004; Wang and Swanson 2007), none, including the seminal conceptual work by Swanson and Ramiller (1997), has explicitly pointed out the importance of collective beliefs shared by actors within the key categories in shaping the development of the visions. Following Hoffman (1999), I argue that the process of organizing vision production and evolution can be viewed as underpinned by a field-level debate, which in turn is enabled and constrained by the interplay of industry beliefs and logics situated in the individual organizational populations comprising the field. By providing organizational actors with action models and evaluation routines salient to their respective populations (Clemens and Cook 1999), these situated institutions influence all aspects of the

practical activities, *viz.*, invention and adaptation of core technology, commerce, and adoption and diffusion of the innovation, involved in production of the organizing vision discourse (see Figure 1). Furthermore, as I will show later, industry beliefs of the consumer population(s) play a major role in defining the business problematic of a vision. Within CCMITII the industry belief structures discussed above are embedded in the domain of industry which I discuss next.

THE DOMAIN OF INDUSTRY

Industry Belief Systems

In establishing the domain of industry, I emphasize the two primary types of organizational populations involved in the field-level debate underpinning production and evolution of an organizing vision: *viz.*, the producer population and the consumer population(s).

According to the cultural-cognitive perspective, social actors within an organizational population do not make decisions that are rational in some universal sense, but rather base their choices on *situationally rational* considerations that exist within a bounded set of legitimately available options (Hoffman 2001). Social structures that embody these options are often termed *industry logics, and beliefs*[9] (Clemens and Cook 1999; Friedland and Alford 1991; Lounsbury 2003; Porac et al. 2002; Thornton and Ocasio 1999) and defined as "common system(s) of meaning that represents an array of material practices and symbolic constructions that constitute

[9] There exist two distinct bodies of literature that study the role of cognitive representations in the dynamics of inter-organizational communities: neo-institutional literature and inter-organizational cognition research. The key difference between the two is that the former focuses on the meaning structures that have been institutionalized (often referred to as institutional logics), while the latter investigates all socially shared beliefs and perceptions - for discussion on the differences between the two see Jepperson (1991) and Phillips et al. (2004). Accordingly, institutional logics have been traditionally conceptualized as stable social structures that are exogenous to the actions of organizational actors who constantly enact and re-enact them (Friedland and Alford 1991). On the other hand, socially shared meaning systems, such as field frames (Lounsbury et al. 2003) and industry beliefs (Rosa 1999; Porac et al. 2002), have been rendered as more dynamic and emerging in the interaction among social actors within a population or field. I believe that the two perspectives are not incompatible insomuch as the institutionalization of inter-organizational meaning structures should be viewed as a continuum, rather than a dichotomy. Therefore, in this chapter I draw upon both literatures and posit that there exist socially shared meaning structures situated within organizational populations that may or may not achieve high degree on institutionalization. I also refrain from using the term 'institutional logics' to avoid confusion and use the terms 'industry beliefs' and 'industry logics' instead.

organizational principles that guide activity within an organizational field" (Friedland and Alford 1991, p. 243). Hence, logics provide a set of assumptions that guide and constrain social actors in how they interpret organizational reality, assess what constitutes appropriate behavior, and perceive available ways to succeed (Thornton and Ocasio 1999). Whilst a particular organizational population is often dominated by a prevalent set of industry beliefs, secondary or repressed logics can often be identified, reflecting divergent interests of certain coalitions of actors and serving as latent precursors to institutional change[10] (Scott 2000).

It also has been argued that logics exist at different levels and are arranged in a hierarchical fashion. At the societal level, for instance, the capitalist market, nation-states, religion, and the family provide a set of ideologies (i.e., highly institutionalized meaning structures) that shape cognition and action of individuals and organizations (Lounsbury 2003; Thornton and Ocasio 1999). At the industry level, the focal level of analysis in this research, four types of nested belief systems underlining interorganizational relationships have been conceptualized (Porac et al. 2002). These belief systems are: (1) *product ontologies* - cognitive representations that link product attributes, usage conditions, and buyer/seller characteristics into a product nomenclature (category) that distinguishes one market product from another; (2) *boundary beliefs* – shared mental models constituting "frames of comparability" that define the identity of market actors and help them identify rivals within an industry or market; (3) *industry recipes* – fundamental assumptions about the nature of work relationships within an industry, as well as the relationships between the industry and its environment that provide a set of rules and norms for reasoning through strategic problems; and finally (4) *reputational rankings* –

[10] The issue of whether organizational fields and populations are governed by a single set of dominant logics or by multiple competing sets appears to have interesting ramifications for the IT-industry interaction research. In this paper, however, in order to reduce complexity in developing CCMITII, I will consider only the former alternative (i.e., one dominant set). Future research may extend the model by incorporating the possibility of competition among multiple sets of logics within the same organizational population.

generalized social evaluations of the relative success of market actors in enacting the industry recipes (Porac et al. 2002, pp. 583-593).

The aforementioned industry belief systems are created and shared among market actors by means of stories. Stories, a mode of discourse, externalize internal cognitive representation held by individual social actors and organizational populations and put them into play at an organizational field-level debate arena where they might be either accepted or contested(Hoffman 1999; Porac et al. 2002). In addition, meanings at different levels of the hierarchy are bound together by means of two reciprocal inference processes: (1) via a bottom-up process where lower level beliefs serve as prerequisites to the enactment of cognitive elements at higher levels of the hierarchy; (2) via a top-down process where higher level logics provide stability or may motivate change in the lower level beliefs (see the left side of Figure 2 as an example of the belief hierarchy for an IT vendor industry).

In this view, a coherent product ontology must exist before organizations can be judged as belonging to the same competition group - that is before boundary beliefs can be construed and enacted. For example, the product category of Enterprise Resource Planning (ERP) systems emerged in the early 1990s as an outgrowth of the manufacturing resource planning concept and over the next several years solidified around a core set of attributes, including, among others, real time processing, data integration across business functions, and configurable packaged software (Davenport 1998). This ontological convergence gave rise to the establishment of the 'ERP vendor' market identity group[11] that over time was joined by actors with such diverse backgrounds as manufacturing, finance and accounting (SAP, Baan); human resource

[11] Boundary beliefs exist at multiple levels of inclusiveness and together form a taxonomy of market competition. To this end, more specific product categories, such as ERP, CRM, etc., underlie the establishment of product markets, the primary networks of rivalry and competition, while more abstract categorizations, such as IT software, comprise broader frames of comparability and summarize larger competitive communities (Porac et al. 2002).

management (PeopleSoft); and database technologies (Oracle). By the same token, stable and consensual boundary beliefs, once in place, channel organizational attention toward comparable peers, thus creating conditions for establishing "industry-specific logics for action vis-à-vis competitors, suppliers, the capital markets, and regulatory agencies" (Porac et al. 2002). Examples of such logics in the ERP context include the use of professional services organizations (i.e., IT consulting companies) as implementation partners and embedding of "best business practices" in the ERP software suites. Finally, stable product ontologies, shared boundary beliefs, and agreed-upon industry recipes together provide a foundation for devising criteria for evaluating performance of firms within a focal organizational population. To this end, industry insiders usually have implicit status rankings detailing comparative standing of major players within the industry. In the world of ERP, and perhaps IT in general, for instance, such rankings are often predicated on metrics provided by IT research companies, such as the Gartner Group and Forrester Research.

Extending the Industry Belief Framework – The Dual Role of Product Ontologies

In developing CCMITII, I conceptualize the domain of industry as a hierarchy of industry beliefs situated in a particular organizational population. To the extent that I have identified two types of populations principal to the development of an issue-based field centered around an IT innovation, *viz.*, producers and consumers, it is important to understand how meaning structures governing each population type shape and are shaped by the field-level debate. To this end, it is necessary to attend to the dual function that product ontologies underlying IT innovations perform within the populations of producers and consumers of the focal innovation. As this duality is not explicitly reflected in the original Porac et al. (2002) framework, I next elaborate on the idea of how the framework can be extended in the context of CCMITII.

Within the Porac et al. (2002) framework of industry belief systems, product ontologies emerge as a result of social interaction that takes place between producers and consumers of a particular product or service. From the producer standpoint, product ontologies play a crucial role in structuring the producer industries as they, once converged, become a cornerstone on which the higher-order industry meaning structures hinge. In the ERP example, the product ontology of ERP systems gave rise to the 'ERP vendor' market identity which gradually developed its own set of action logics and evaluation routines. Conversely, the function that product ontologies perform within the consumer industries has received little attention. This, in my opinion, happened primarily because the research linking product categorization and market structuring mechanisms was traditionally confined to studying products catered to individual, not organizational, consumers. Unlike consumer products, technological systems, while also often exchanged in market transactions, do have a potential to foster a profound transformational effect in organizational populations that acquire and implement them. In this respect, modern organization theory views technology as "one of the central factors motivating the founding, structure, and management of most organizations" (Schilling 2000, p. 158). At the interorganizational level, technological change has been shown to alter the nature of competition, redraw market and population boundaries, and affect the formation of concrete interorganizational relations, such as strategic alliances (Porter and Millar 1985; Stuart 1998; Tushman and Anderson 1986).

Information systems today comprise a key subset of organizational technology and assume both aforementioned qualities: (1) the capacity to be a subject of market exchange and, as such, to provide a core for structuring of producer industries, and (2) the potential to transform consumer industries. The former aspect of IS gained its significance due to the 'packaged

transition' of the 1990s wherein companies seeking to replace their in-house-built legacy systems turned in mass to packaged business application software supplied by outside vendors (Swanson and Wang 2005). This trend had essentially created a premise for the ongoing producer-customer interaction necessary for the development of product ontologies. The latter quality of IS manifests itself in the fact that over the last several decades information technology has become a de-facto enabler for a vast majority of business processes and strategies in organizations, thus shaping rules and means of competition across a variety of industries (Piccoli and Ives 2005).

Accordingly, to accommodate this dual role of IT in facilitating organizational field-level organizing I propose that the original Porac et al. (2002) industry belief hierarchy be extended. First, I suggest using the term *IT product ontology* to denote fundamentally shared mental models comprising basic definitions, major attributes, and usage conditions, as well as characteristics of the underlying IT artifact for a particular type of information system. This definition is essentially equivalent to the original conceptualization of product ontologies, but catered towards those ontologies that underlie IT systems. Consequently, IT product ontologies are theorized to serve as market cores for structuring producer industries (e.g., software vendors) and to facilitate comprehension of the underlying IT systems by actors within the consumer industries (see the left hand side of Figure 2 on the next page).

It is critical to point out, however, that from the point of view of the consumer industries, while IT product ontologies provide shared cognitive structures enabling consumer sense-making, they neither are a part of the industry belief hierarchy governing that population, nor do they entail any significant changes in its constitutive meaning structures. Consider for instance Computerized Physician Order Entry (CPOE) systems, a class of clinical IS targeted primarily towards the hospital population within the healthcare organizational field. Having been around

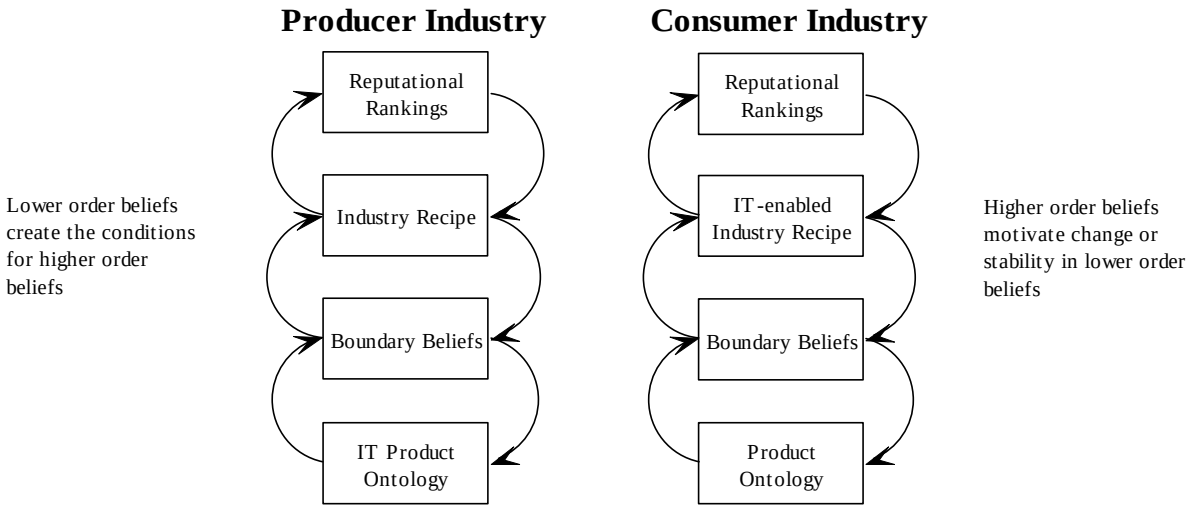

Figure 2: Hierarchy of Industry Beliefs for Producer and Consumer Industries

for almost fifteen years, the CPOE product ontology converged around a fairly stable set of core attributes comprising such aspects as direct entry of patient orders into a computerized system by physician, seamless integration with other clinical functions and clinical decision support (see case study in Chapter 5). Despite the ontological convergence, however, CPOE has yet to become an integral part of how hospitals conceive strategies and organize operations, which is best witnessed by the ongoing debate in the field level discourse about the role of CPOE in facilitating one of the key healthcare industry recipes, namely the quality of patient care (Koppel et al. 2005; Kuperman and Gibson 2003). In this context, one other reason for introducing the term 'IT product ontology' to the Porac et al. (2002) framework, albeit a technical one, is to be able to distinguish between product ontologies that a consumer industry is formed around (e.g., ontologies of various medical services provided by hospitals) and ontologies of technological systems marketed to organizations within the focal consumer population by outside vendors (e.g., CPOE ontology).

The second modification to the Porac et al. (2002) framework suggested in this thesis seeks to account for the transformational role of IT innovations in consumer industries. I

introduce the term *IT-enabled industry recipe* to describe industry logics for action that are intrinsically interwoven in and dependent on sophisticated information technologies. According to this perspective, IT systems become an integral part of the industry belief hierarchy as they embody the means available to organizational actors within a particular consumer population(s) to tackle strategic problems and achieve competitive advantage (see right hand side of Figure 2). The relationship between IT-enabled industry recipes and IT product ontologies, therefore, is one wherein every IT-enabled industry recipe within a consumer population has a corresponding IT product ontology that partakes in structuring of a respective producer population. Nonetheless, not every IT product ontology is associated with an IT-enabled industry recipe – that is, some IT innovations never realize their industry-transforming potential. Examples of IT-enabled industry recipes are abundant in the present-day business environment and include, for instance, the aforementioned online reservation services that transformed the travel agent industry (Lewis et al. 1998), as well as logics aimed at streamlining supply chains, such as collaborative planning, replenishment and forecasting (CPFR) (Koloszyc 1998). These industry recipes are build upon IT product ontologies of computer reservations systems (CRS) and supplier relationship management systems (SRM) respectively.

BRINGING THE ELEMENTS TOGETHER: ORGANIZING VISION LIFECYCLE

In this thesis I argue that the development and diffusion of complex IT innovations is shaped by a variety of industry-level factors and conditions originating in the organizational populations of consumers and producers of the focal IT innovation. As the innovation matures and spreads, it exerts a structuring effect on the producer populations and may trigger important transformations of the consumer industries. To capture these interaction dynamics I develop a process-oriented model that emphasizes the cultural-cognitive aspects of the IT-industry relationship (see Figure 3

on the next page). Within the model, I conceptualize the domain of information technology as the process of production and evolution of organizing visions of IT innovations; I define industry structures as the hierarchy of industry beliefs and logics situated in individual populations comprising the field.

I further posit that the nature of the IT-industry interaction shifts during the lifespan of an IT innovation. These shifts are predicated on changes in properties of the organizing vision constitutive elements, *viz.*, discourse and structure, which translate into the different roles that the vision plays in the consumer and producer populations at different points in time. Accordingly, to provide a frame of reference for describing this evolutionary process I introduce the concept of the organizing vision lifecycle and place it in the core of CCMITII. I suggest that the lifecycle is comprised of three stages, reflecting the growing extent of institutionalization of the organizing vision structure. As the structure moves along the institutionalization continuum, it becomes embedded in interpretive schemas and action routines shared by members of the population, ultimately evolving into an integral part of the industry belief hierarchy. In other words, it "make(s) the transition from theoretical formulation to social movement to institutional imperative" (Strang and Meyer 1993, p. 495).

For each stage of the lifecycle I outline the essential properties of the organizing vision structure and discourse and explicate key aspects of the IT-industry interaction. Following Van de Ven (Van de Ven et al. 1999), I also argue that stages do not unfold in a linear fashion and multiple loopbacks may occur throughout the lifecycle. In this respect, I provide conjectures as to the possible lifecycle trajectories that an organizing vision may follow at each stage. Finally, I draw on the existing empirical literature on organizing visions to provide examples in support of my claims (see Table A1 in Appendix A for summary).

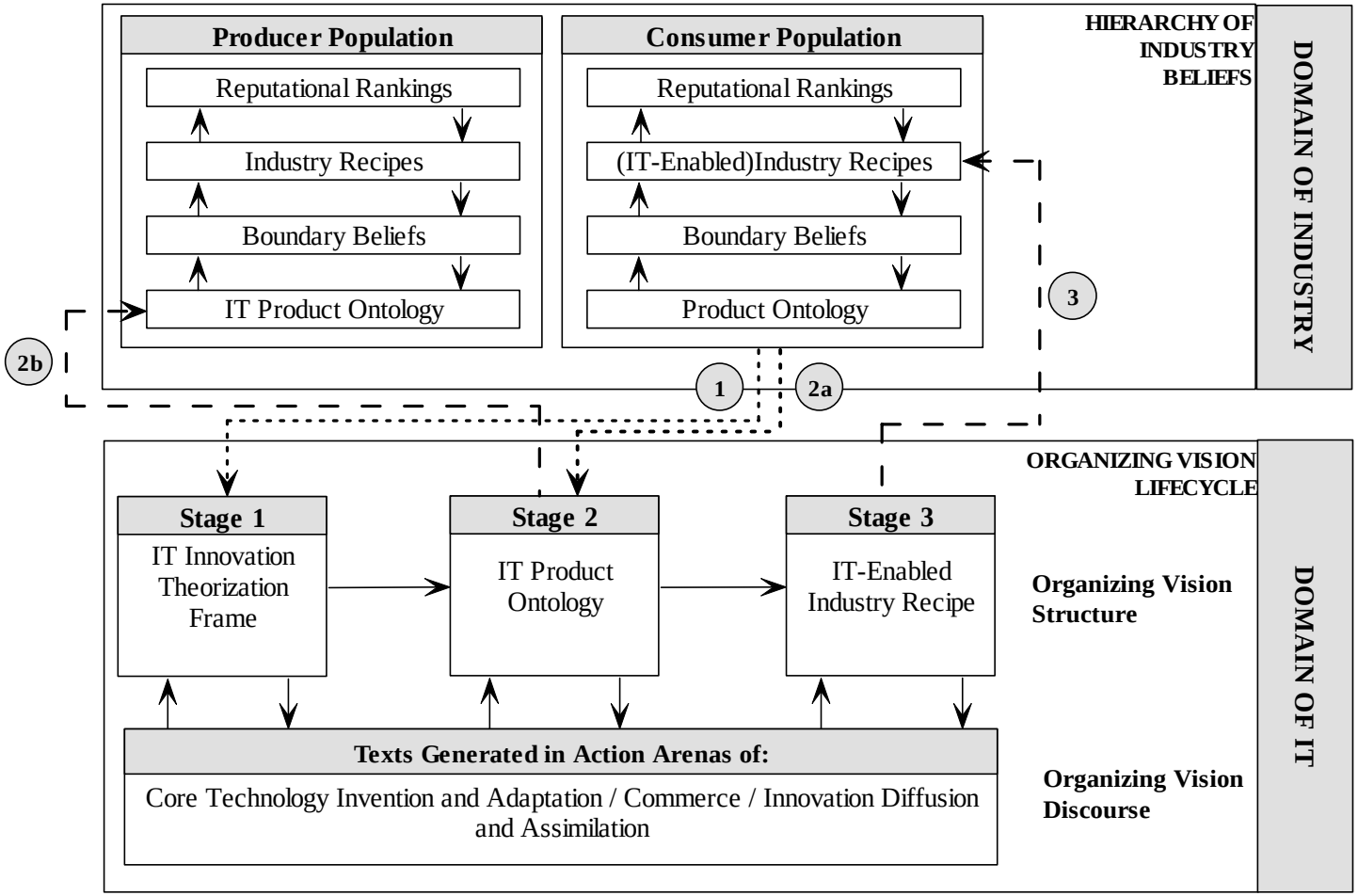

Figure 3: Cultural-Cognitive Model of IT-Industry Interaction (CCMITII)

Stage 1: Organizing Vision as Theorization

The early stage of the organizing vision lifecycle has been labeled as "launching" (Wang and Swanson 2007) and identified as having an utmost importance for the future development of the vision (Swanson and Ramiller 1997). Here I argue that a meta-theoretical concept that best describes organizing visions in Stage 1 is that of *theorization*. Theorization, as discussed in Chapter 1, usually involves development of abstract categories and formulation of chains of cause and effect (Strang and Meyer 1993) that "simplify and distill the properties of new practices and explain the outcomes they produce" (Greenwood et al. 2002, p. 60).

Organizing Vision Structure

From a structural perspective, an organizing vision in Stage 1 can be viewed as a constellation of texts comprising a theorization frame[12]. Such a frame does not yet attain the status of a socially shared belief or a meaning structure, but nonetheless performs a number of important socio-cognitive functions. In particular, it helps to disseminate organizing ideas about the focal IT innovation aimed at aiding social actors across the organizational field to perceive, interpret, and act upon the innovation in ways that facilitate its acceptance and spread. For example, a technology analyst in his inaugural report on Professional Services Automation (PSA) software offered the following theorization text:

> "Professional Services Automation" is the term used to describe a new family of applications designed for professional services organizations that enable them to become more productive and profitable by increasing their efficiency on the job through increased employee utilization and integrated knowledge management. PSA solutions also have the capability to increase client satisfaction by maintaining an updated flow of information to the client" (Hofferberth 1999, as cited in Wang and Swanson 2007).

[12] The terms 'frame' and 'framing' have been used in the literature to describe a variety of social phenomena (see Scheufele 1999 for an overview). Here I use 'frame' to denote an outcome of an active discursive process whereby actors attempt to influence the interpretation of reality among various audiences (Benford and Snow 2000).

This text is clearly targeted at addressing the two theorization tasks (Strang and Meyer 1993; Tolbert and Zucker 1996): (1) it theorizes the adopting population by identifying professional service organizations as the target population for the innovation, and (2) it theorizes the diffusing practice by detailing key organizational problems (e.g., employee utilization, knowledge sharing) that the application is expected to ameliorate.

Hence, a theorization frame acts as a "schemata of interpretation" (Goffman 1974) by rendering the focal IT innovation meaningful, but it does so in ways that favors the interests of social actors promulgating the innovation. In this sense, I argue that organizing visions in Stage 1 are conceptually very similar to Collective Action Frames (CAF). These frames are produced by social movement organizations to legitimate the organization's agenda and mobilize potential adherents and constituents (Benford and Snow 2000). Accordingly, in the following discussion I extensively draw upon the insights from the collective action frame literature.

Organizing Vision Discourse

In Stage 1 of the organizing vision lifecycle, it is the community of practice entrepreneurs that serves as a primary source of discourse. The community itself may consist of a fairly heterogeneous group of organizational actors including vendors, consultants, and industry analysts. For example, 65% of the early discourse on ERP was comprised of texts generated by the three aforementioned groups of actors (Wang and Ramiller 2004). Similarly, IT research firms and analysts, IT professional services organizations, vendors, and technology conference organizers have been shown to play an active role in launching an organizing vision of Professional Services Automation (Wang and Swanson 2007). The 'championing' role of the actors seeking to promulgate the innovation in driving the discourse in this early stage of the vision's development seems natural, as organizations from the consumer populations simply have not yet had an opportunity to learn enough about the innovation to join the discourse. One

other important source of the organizing vision discourse in Stage 1 is the industry media. In the aforementioned ERP example, 15% of the early organizing vision discourse was produced by trade publications and journalists (Wang and Ramiller 2004). While sometimes considered a part of the entrepreneurial community, industry media, in my opinion, should be viewed as a separate player. The idea of impartiality of the market information proffered by the media (Anand and Peterson 2000), along with the media's status as an organizational field-level actor, rather than a member of a producer or consumer population (Lounsbury and Rao 2004), warrant such an analytical distinction.

While the volume of discourse may vary for different organizing visions in Stage 1, generally a gradual increase is typical. This trend is predicated on the growing number of texts produced by practice entrepreneurs in their attempts to generate meaning for potential adopters, combined with the new organizational actors joining the discourse community. These new actors may be new vendors trying to jump on the bandwagon, as well as players representing industry media, who need to react to the new developments within the field to perform their "information regime" role (Anand and Peterson 2000). Despite the aforementioned factors driving the volume of the organizing vision discourse up, I posit that Stage 1 of the organizing vision lifecycle is typified by a temperate growth in the volume of discourse, as exemplified by the number of empirical studies on organizing vision (Wang and Ramiller 2004).

The focus of the discourse in this early state of the organizing vision lifecycle reflects the two theorization tasks outlined above: theorization of the adopting population, and theorization of the adopting practice (Strang and Meyer 1993; Tolbert and Zucker 1996). Consistent with these tasks, the early discourse on ERP emphasized the know-what and know-why aspects of the innovation (Wang and Ramiller 2004).

Finally, I argue that, similar to collective action frames (Benford and Snow 2000), organizing vision discourse in Stage 1 can be characterized in terms of three processes involved in the production of the theorization frame. The process of *articulation* deals with assembling pieces of information about the innovation's attributes, usage conditions, benefits as well as other aspects reflecting the innovation experience such that they hold together in a consistent and compelling manner. To carry out articulation of the Professional Services Automation vision, for example, IT vendors turned to industry analysts and research firms to write white papers and research reports that formally defined the market (Wang and Swanson 2007). Key players of the Application Service Provisioning movement, on the hand, went down a different route and established the ASP Industry Consortium, whose mission was to promote the ASP industry by, among other means, coordinating production of theorization texts (Currie 2004). An important element of the frame articulation is the creation of a label or a "buzzword" that an organizing vision will come to be identified by. This label plays a crucial synecdoche function of linking together various elements of the vision (Benford and Snow 2000; Swanson and Ramiller 1997).

The second process involved in the frame production is the processes of frame *alignment*. Theorization frames are developed and deployed to achieve a specific purpose, which is to facilitate diffusion of the underlying innovation. Accordingly, in order to ensure the innovation's initial acceptance and salience among potential adopters, practice entrepreneurs will seek to align their theorization frames with the meaning structures in the belief hierarchy situated in the target consumer populations. Promulgators of the Electronic Medical Records vision, for instance, have made consistent attempts to link the vision with the quality of patient care, prevalent in the healthcare industry (Davidson and Reardon 2005).

Finally, the third process underpinning organizing vision discourse is the process of *contestation*. Once theorization texts enter the discourse arena, they usually become contested by

a variety of players with diverging interest in the focal IT innovation. In Stage 1 of the organizing vision lifecycle, three types of contestation processes are typical: contestation by vision opponents (i.e., competition), contestation by the industry media, and contestation in the form of theorization disputes within the community of practice entrepreneurs. For instance, significant differences in ASP models offered to potential customers by large and small ASP vendors offers an example of the latter type of contestation dynamics (Currie 2004). Unlike frame articulation and alignment, which occur primarily during Stage 1, the process of contestation takes place throughout the entire lifecycle of an organizing vision. Specific aspects of contestation, however, vary from one stage to another and, as such, can be used to empirically differentiate between the stages.

The three aforementioned discursive processes, *viz.*, articulation, alignment, and contestation, are not independent and it is the outcome of their interaction that shapes the development of the organizing vision structure in this early stage of the lifecycle, and ultimately determines whether the vision will progress to the next stage or will dissipate.

IT-Industry Interaction

In Stage 1 of the organizing vision lifecycle the interaction between industry and IT is dominated by the influence of industry recipes situated in the consumer population on the development of a focal organizing vision (Arrow 1 in Figure 3). As shared cognitive representations reflecting rules and means of competition, industry recipes determine criteria employed by organizing actors in establishing strategic and tactical goals, assessing firm's performance with respect to these goals, and identifying potential performance gaps. Hence, in developing the theorization frame, practice entrepreneurs will seek to align it with the industry recipes of the target consumer population(s) by identifying pertinent performance gaps and rendering the focal IT innovation as a means to resolve these gaps. The Professional Services Automation vision, for instance, was

initially positioned as a solution to achieve greater efficiencies in managing an increasingly disperse and mobile workforce of IT consultancy firms (Wang and Swanson 2007). Similarly, organizations in the consumer population will evaluate theorization texts through the lens of industry recipes salient to them. These two dynamics, I argue, underpin what Swanson and Ramiller (1997) describe as the process by which the core business problematic of an organizing vision emerges:

> "The core problematic is itself an interpretation, born in the wider society, and is given repeated and honed articulation as that to which the organizing vision is perceived, and argued, to be a response" (Swanson and Ramiller 1997, p. 466).

Therefore, I posit that in Stage 1 of the organizing vision lifecycle the key aspect of the IT-industry interaction is that industry recipes situated in the consumer population effectively encode the business problematic of a focal organizing vision.

Swanson and Ramiller (1997) also argue that a pertinent business problematic is not necessarily clear at the outset and early in its lifecycle an organizing vision often constitutes "a solution in search of a problem". They underscore the malleability of the enabling technology as one of the factors driving a series of "rhetorical experiments" through which the final problematic crystallizes. To complement this perspective, I posit that consumer industry recipes provide another source of interpretive flexibility in the early development of a business problematic. Neo-institutional scholars have long recognized that cultural-cognitive schemas governing organizational populations, such as industry recipes, may be more or less mutable (i.e., differ in the degree of sanctioned compliance), embody internal contradictions, and finally there often exist multiple recipes within the same population (Clemens and Cook 1999). In the field of healthcare, for example, vendors of Computerized Physician Order Entry (CPOE) systems emphasize both the capacity of CPOE to improve clinical outcomes (i.e., the 'quality of care' recipe) and its ability to reduce cost of clinical services for the providers (i.e., the 'cost

effective care' recipe) (see case study in Chapter 5). Consequently, in producing the theorization frame and selecting which industry recipe(s) to align it with, practice entrepreneurs are faced with a difficult task of resolving malleable technology with multiple and often contradictory industry meaning structures. This combinatorial complexity causes the early interpretive flexibility of the business problematic described by Swanson and Ramiller (1997), but also has more far-reaching implications for the long-term development of the vision, which I will discuss later in the chapter.

Possible Lifecycle Trajectories

An organizing vision in Stage 1 may follow one of two possible lifecycle paths: (1) it may never capture the attention of organizations in the target consumer populations failing to accomplish its key objective of engaging potential adopters in active sense-making in regards to the innovation. In this case, an organizing vision is likely to be abandoned by practice entrepreneurs. Some of the theorization texts comprising the vision, nonetheless, will be reused and rearranged to create a new theorization frame for the underlying IT innovation. (2) an organizing vision may enter Stage 2 of its lifecycle which I discuss next.

Stage 2: Organizing Vision as Product Ontology

Organizing Vision Structure

Stage 2 of the organizing vision lifecycle is marked by the development an organizing vision structure into an *IT product ontology*, a concept I introduced earlier in the chapter. Product ontologies (or 'categories' as they are often referred to in the marketing literature) are dynamic consensual knowledge structures that emerge as an outcome of negotiation among market participants, and serve the purpose of defining the goods or services being exchanged in market transactions (Lounsbury and Rao 2004; Porac et al. 2002; Rosa et al. 1999). In the context of the organizing vision lifecycle, the transformation of an organizing vision structure from a

theorization to an IT product ontology occurs when after a period of interpretive flexibility characterized by a large number of unstable, incomplete, and often disjoint texts, revolving in and around a theorization, members of the producer and consumer populations converge, at least temporarily, on a fairly coherent cognitive representation of an IT innovation (Porac et al. 2002). As a result of this convergence, the organizing vision structure attains the status of a socially shared belief – a property that differentiates Stage 1 and Stage 2 of the organizing vision lifecycle. Computerized Physician Order Entry (CPOE) systems discussed earlier provide an example of an organizing vision in Stage 2 of the lifecycle.

The nature of the ontological convergence of organizing visions of IT innovations is, in and of itself, an issue in need of further investigation. Marketing studies dealing with consumer products have identified a wide array of categorization (ontological) bases (see Rosa and Porac 2002 for a review), but in general it is agreed that such convergence occurs around a core set of attributes:

> "Products of one type can be distinguished from those of another type to the extent that there are gaps of attributes between them" (Rosa et al. 1999, p. 67)

Nonetheless, in the world of complex IT innovations (Swanson 1994), such as enterprise software suites, the underpinnings of the product ontology stabilization are far less clear. While one might argue that different classes of enterprise software can also be categorized based on a core set of attributes, or features as they are usually labeled in IS literature (Griffith 1999), I would suggest that it is a stable business problematic that serves as an anchor for the convergence of IT product ontologies. Currie (2004), in this respect, identifies a wide range of ASP offerings that differ significantly in terms of their component parts but share a common view of achieving greater cost-efficiency through 'utility computing' (e.g., Ross and Westerman 2004).

Organizing Vision Discourse

Inasmuch as the socially shared status of the organizing vision structure in Stage 2 emerges from the negotiation among members of an organizational field, the Stage 2 organizing vision discourse is characterized by a widening scope of the participating actors. In particular, the voice of organizations representing consumer populations becomes much more pronounced within the discourse community. For example, in the period of time between 1996 and 1999, when the concept of ERP had become widely recognized, texts originated in the consumer organizations accounted for 50% of the total ERP discourse (Wang and Ramiller 2004). At this point in the lifecycle, many of these organizations have had first-hand experiences with adopting and implementing the innovation, and stories describing the outcomes of these endeavors start to "leave traces" in the field-level discourse (Phillips et al. 2004). At the same time, while the role of producers and the industry media proportionally decreases, they remain important and active contributors to the organizing vision discourse.

As the number of organizational actors partaking in the field-level discourse increases, so does its volume. In general, the increase is significant with a large number of texts being generated by members of the consumer and producer populations, as well as by field-level actors, such as the industry media (see Wang and Ramiller 2004). The focus of the discourse also shifts, as compared to Stage 1. Since at this point members of the populations comprising the field have converged on a shared representation of the innovation, texts addressing the 'know-what' aspects of the organizing vision diminish. On the other hand, the motivational 'know-why' discourse persists, and a new line of the enabling 'know-how' discourse emerges (Wang and Ramiller 2004). Similar to the shifting focus of the discourse, the nature of contestation in Stage 2 of the organizing vision lifecycle undergoes important changes as well. Most notably, in addition to the three types of contestation processes described in Stage 1, *viz*., contestation by

vision opponents, contestation by industry media, and theorization disputes within the entrepreneurial community, a fourth source of contestation emerges – contestation by members of the consumer organizations. These dynamics stem from the aforementioned first-hand experiences that adopter organizations acquire through their attempts to implement and assimilate the focal innovation. While some experiences might generally have positive outcomes, others will likely fail to meet the expectations that were fostered by the vision's original theorization. For example, the organizing vision of ASP promoted by technology firms was questioned by the numerous disaster stories of the ASP adopters describing poor quality of service, loss of customer data, and failure of ASP provides (Currie 2004). Hence, it is the voice of the disgruntled customers heard in the field-level discourse that fuels the fourth type of the discursive contests – contestation by members of the consumer organizations.

IT-Industry Interaction

Stage 2 of the organizing vision lifecycle is characterized by a continuing influence of the consumer industry meaning structures on the development of an organizing vision. In addition, the unfolding structural transformations of the vision start having an altering effect on industry beliefs situated in the producer population.

In the consumer populations, meaning structures comprising the industry belief hierarchy continue to influence the development of a focal organizing vision (Arrow 2a in Figure 3). Similar to Stage 1, these effects take place primarily through providing organizational actors with decision-making scripts and evaluation routines in regards to the innovation. In Stage 2, however, organizations draw upon industry recipes and other industry belief structures not only to make sense of vicarious experiences, such as evaluation of the theorization frame with respect to its interpretability, plausibility, importance, and discontinuity (Ramiller and Swanson 2003), but also to evaluate their first-hand experiences gained through the implementation of the IT

innovation. The assessment of these experiences through the lens of industry meaning structures will then shape field-level contestation, as shown in the above ASP example.

As organizing visions evolve into IT product ontologies, they assume new important functions in the populations of producer and consumers of the focal innovation. Nevertheless, in Stage 2 of the lifecycle it is only the producer populations where, as I will show below, the evolution of the organizing vision entails shifts in the industry meaning structures. In the consumer populations, at the same time, IT product ontologies continue to serve as an important market sensemaking tool. In this vein, they help consumers to navigate the complex world of IT products and services by providing a basis for the evaluation of new and existing technology solutions and by establishing boundaries around similar kinds of products (Porac et al. 2002; Rosa et al. 1999). The e-learning marketplace, for instance, encompasses a variety of IT applications organized around fairly stable ontologies of Student Administration systems, Course Management systems, Learning Content Management systems etc. (Collier 2002). As noted earlier, however, IT product ontologies do not yet comprise a part of the consumer industry belief hierarchy and, therefore, have no significant effect on the consumer industry meaning structures (see the earlier CPOE example).

In the producer populations, on the other hand, the ontological convergence of an organizing vision structure provides a foundation for the development of a new market identity (Arrow 2b in Figure 3). Organizations sharing the identity explicitly position themselves as vendors of the focal innovation and perceive each other as direct rivals. For example, the product ontology of Professional Services Automation (PSA) attracted a variety of firms with diverse technological backgrounds, which either identified themselves as pure-play PSA vendors or, in case of large vendors, rolled out applications explicitly targeting the PSA market (Wang and Swanson 2007). Hence, in the producer populations the newly emerged product ontology lays

the groundwork for the development of boundary beliefs and eventually higher-order meaning structures, such as industry recipes and reputational rankings.

Possible Lifecycle Trajectories

An organizing vision in Stage 2 of its lifecycle may follow several possible lifecycle paths. First, the vision may remain in Stage 2 for an extended period of time – that is, an organizing vision forms a stable product ontology that remains a valuable market sensemaking device, and therefore is preserved by producers and consumers. A product ontology of Computerized Physician Order Entry systems with the estimated longevity of seven years illustrates this scenario (see case study in Chapter 5). Alternatively, an IT product ontology may become destabilized, which often results in the category splitting, branching, absorption by (or merger with) another product ontology, or complete elimination (Lounsbury and Rao 2004). Around 2002, for instance, the product ontology of ASP branched out a new vision of web services, which led a number of ASP vendors to reposition themselves as web services providers (Currie 2004). Marketing and organizational researchers have identified several factors determining stability and longevity of product ontologies. These factors range from technical considerations, such as the number of new entrants into the ontology and model performance variability, to political dynamics revolving around the distribution of power within the field (Lounsbury and Rao 2004; Rosa et al. 2005). Finally, an IT product ontology may advance further along the institutionalization continuum, which will mark the progression of an organizing vision into Stage 3 of its lifecycle.

Stage 3: Organizing Vision as IT-Enabled Industry Recipe

Organizing Vision Structure

Stage 3 of the organizing vision lifecycle manifests the transformation of an organizing vision into an *IT-enabled industry recipe*. This transition represents the institutionalization of the

innovation within the consumer population and is accompanied by reification (i.e., attainment of taken-for-grantedness) of the organizing vision structure. Accordingly, from the consumer industry standpoint, the difference between Stage 2 (IT product ontology) and Stage 3 (IT-enabled industry recipe) of the organizing vision lifecycle follows from Jepperson (1991) and Phillips et al. (2004) who distinguish between institutions and other socially shared cognitive structures on the grounds that the former provide a self-perpetuating social mechanism enforcing actor compliance. In the context of CCMITII, this mechanism is established through the integration of an organizing vision structure into the hierarchy of industry beliefs where it participates in the development of (IT-enabled) industry recipes, as well as provides a foundation for the production of higher-level structures, such as reputational rankings. In other words, an organizing vision for an IT innovation that has reached Stage 3 of its lifecycle ceases being an optional endeavor whose efficacy needs to be evaluated based on a set of prevalent industry recipes, but becomes embedded in those recipes and attains the status of a taken-for-granted success prerequisite. An organizing vision of ERP, for example, has reached such a taken-for-granted status as underscored in the fact that firms' announcements of ERP implementations have a positive effect on the earnings predictions made by analysts for these firms (Hunton et al. 2002). Hence, it is the partaking in the constitution of industry norms and beliefs governing the consumer population that grants IT-enabled industry recipes the institutional power and distinguishes Stage 3 of the organizing vision lifecycle from Stage 2.

Organizing Vision Discourse

In Stage 3 of the lifecycle, the organizing vision discourse is driven primarily by members of the consumer population, while the participation of vendors and industry analysts becomes minimal. Similarly, the overall volume of the discourse experiences a drop (e.g., Wang and Ramiller 2004). These trends are underpinned by the Stage 3 structural transformation discussed above

and consistent with the rhetorical model of diffusion proposed by Green (2004). Insofar as the organizing vision beliefs become taken-for-granted within the consumer population, they attain self-perpetuating qualities and, hence, do not require further rhetorical justification by the promulgators of the innovation (Green 2004). Accordingly, discourse by practice entrepreneurs as well as the overall volume of the discourse decrease. In the same vein, while I would expect the contestation dynamics to continue at a certain level, as institutional production and evolution never stops, overall the number of texts across all potential contestation sources diminishes in Stage 3.

IT-Industry Interaction

The distinguishing characteristic of Stage 3 of the organizing vision lifecycle is the shifts in the belief hierarchy of the consumer industry brought about by the structural evolution of a focal organizing vision.

As discussed above, in Stage 3 an organizing vision structure becomes not just aligned but fully integrated into the hierarchy of industry beliefs situated in the consumer population (Arrow 3 in Figure 3). In the context of CCMITII, this point of full integration marks the evolution of an IT product ontology into an IT-enabled industry recipe and concludes the technology-triggered cycle of diachronic institutional transformation of the consumer industry. Initially the change is most evident at the level of industry recipes, as a new IT-enabled industry recipe emerges. Over time, however, shifts at all levels of the industry belief hierarchy may occur due to the interconnectedness of the industry beliefs. These shifts may be of different magnitude. Some IT innovations are generally congruent with existing industry logics, and therefore the emergence of a new IT-enabled industry recipe will only lead to incremental changes within the belief hierarchy that are fairly easy to achieve. For example, the shift from a traditional ‘phone-only’ call center to a customer access center that allows communication via a

variety of channels (e.g., web, phone, email, instant messaging) represents an example of such a scenario (Anton 2000). Other types of IT innovations, however, may challenge core understandings and practices within an organizational population, and hence warrant fundamental shifts throughout all levels of the industry belief hierarchy. Radical transformation of the travel agent industry triggered by the spread of electronic booking applications (Lewis et al. 1998) exemplifies the latter scenario. In general, for these innovations to achieve Stage 3 of the organizing vision lifecycle, a much greater effort on the part of practice entrepreneurs is needed.

Possible Lifecycle Trajectories

Since in Stage 3 of the lifecycle an organizing vision attains properties of an institutionalized cognitive schema, I would expect it to exhibit a high degree of durability (Phillips et al. 2004) and, therefore, to remain stable for a prolonged period of time. In the long run, however, the institutional change dynamics described in this thesis will typically lead to its deinstitutionalization and replacement by a new IT-enabled business recipe, in the same vein as the logic of Manufacturing Resource Planning had been over time replaced by that of Enterprise Recourse Planning (Klaus et al. 2000).

CHAPTER 3: ORGANIZING VISIONS FOR IT INNOVATIONS AND LEGITIMACY

As demonstrated in the previous chapters, the organizing vision framework offers a sound conceptual foundation and rich analytical context for furthering research into IT innovation diffusion. Nevertheless, I argue that several aspects of the framework warrant further elaboration if its full potential is to be realized. In particular, I posit that the current understanding of the key functions performed by organizing visions, namely interpretation, legitimation, and mobilization, is quite limited and as of now has received little explicit empirical attention. Similarly, specific strategies that organizational actors engage in to enable the three aforementioned functions have not been addressed in a systematic fashion in the literature. In the next two chapters, I start to explore these issues by developing a conceptual framework through which to examine the legitimation function of organizing visions and to understand discursive strategies employed by the actors to build legitimacy for IT innovations. Although my research focuses exclusively on legitimation, it has important implications for the remaining two functions of organizing visions. As I will show later, the interpretation function may largely be described *as a form* of cognitive legitimation, while the mobilizing function can be viewed *as an outcome* of successful legitimation efforts.

In order to further our understanding of the legitimation function performed by organizing visions, I employed a multi-stage research approach. In part one of the study, which is described in this chapter, I reviewed and synthesized major conceptual views on legitimacy drawn from both organization theory and IS literatures. This led up to the formulation of an a priori framework delineating major forms of legitimacy and generic strategies employed by social actors to build legitimacy for new ventures. In part two of the study, presented in the next

chapter, I refined the framework to accommodate specifics of the IT innovation domain and employed the modified framework as a research lens to carry out a historical case study.

The remainder of this chapter is organized as follows. In the next section I briefly revisit key conceptual underpinnings of the three functions performed by organizing visions, offer a revised interpretation of the interrelationship between the functions, and describe how the three functions have been addressed in the extant literature on organizing visions. Next, I review key aspects of the conceptualization of legitimacy in the broader organization theory literature. I then provide a synthesis of the major forms of legitimacy and identify key generic strategies for building legitimacy.

LEGITIMATION FUNCTION OF ORGANIZING VISIONS

As mentioned earlier, Swanson and Ramiller (1997) identify three basic functions, *viz.*, legitimation, interpretation, and mobilization, that organizing visions perform within the organizational community to facilitate and shape diffusion of IT innovations. Below I explore how these functions have been conceptualized in the organizing visions literature and build an argument that, among the three functions, legitimation plays a central role in enabling IT innovation diffusion. I also demonstrate that the empirical research into organizing vision legitimation has been very limited to date.

First, within the organizing visions framework legitimacy is conceived as being "reflected … in how it (the vision) is received by practitioners and works its way into their assumptions and practices" (Ramiller and Swanson 2003, p. 16). In their original essay, Swanson and Ramiller (1997) described the function *of legitimation* as related primarily to the soundness of the rationale to adopt the innovation, as projected by the vision. Legitimacy, in this view, is not directly linked to the population density and mimicry (Tolbert and Zucker 1983), but achieved by grounding the technology in broader business concerns and demonstrating its

relevance to prominent organizational needs. Legitimacy can also be bolstered by affiliating the practice with the reputation of social actors who promote as well as adopt it.

The subsequent research on the executive response to organizing visions provided further insight into the interworkings of the legitimation function (Ramiller and Swanson 2003). The authors introduced the concept of critical reception of organizing visions, which describes how certain social groups (e.g., IT executives) view and react to an organizing vision for a particular IT innovation[13]. The structure of critical reception comprises several dimensions, *viz.*, interpretability, plausibility, importance, and discontinuity, which reflect the criteria employed by members of these groups in evaluating the organizing vision discourse. I will draw upon these dimensions later in this chapter, when I discuss forms of legitimacy.

Second, the function of *interpretation*, according to Swanson and Ramiller (1997), is aimed at reducing the cognitive complexity surrounding the innovation in its early stages and helping social actors to render the practice meaningful within their respective belief systems. In other words, by creating a vision an adopter community provides its members with a rationalized frame of reference that "explains the innovation's existence relative to its broader social, technical and economic context" (Swanson and Ramiller 1997, p. 460). This frame of reference will be further employed by individual organizations to evaluate the innovation's eventual success or failure. Finally, the function of *mobilization* performed by an organizing vision helps to activate, motivate and coordinate activities of various parties that provide technical, service and knowledge support to prospective adopters of an IT innovation. In essence, this function is responsible for providing the market infrastructure "necessary for making the innovation a reality

[13] Ramiller and Swanson (2003) explicitly link their study on the executive response to organizing visions to the legitimation function. On page 16 of the study they say: "The vision's legitimacy is reflected, ultimately, in how it is received by practitioners and works its way into their assumptions and practices. This is where the current study comes in" (Ramiller and Swanson 2003, p. 16). Based on this statement, I argue that it is appropriate to extrapolate their findings on the dimensions of critical reception into the domain of organizing vision legitimacy.

and putting it into practice" (Swanson and Ramiller 1997, p. 461). The interplay among the three functions determines whether an innovation embodied in a particular organizing vision will diffuse into the wider community or dissipate becoming yet another fad.

While Swanson and Ramiller do not explicitly address the issue of a possible interdependence among the three functions, I argue that such interdependence does in fact take place and that the function of legitimation assumes a central role in facilitating the IT innovation process. Indeed, institutional theorists have long argued that the ability of key constituents to comprehend a phenomenon in the backdrop of their experienced reality is a necessary condition of the phenomenon acceptance and can be operationalized as a special form of cognitive legitimacy (Suchman 1995; Suddaby and Greenwood 2005). In this view, the function of interpretation performed by an organizing vision can be conceptualized as an integral part of the vision's legitimation efforts. This argument, however, should not be interpreted as an attempt to degrade the importance of interpretation in the functioning of organizing visions but rather as a purely conceptual move that, in my opinion, enhances parsimony of the organizing vision framework and makes it more consistent with the current understanding of legitimacy in organization theory.

Similarly, I argue that mobilization can be viewed as an outcome of successful legitimation of an organizing vision. Although Swanson and Ramiller tend to focus on potential adopters of an innovation in their discussion of the legitimation function, I believe that it is also important to consider how organizing visions gain legitimacy in the eye of the stakeholders who will eventually comprise a marketplace for the innovation (e.g., consultants, other vendors etc.). It is only when such legitimacy is granted that the mobilization of the entrepreneurial and market forces in support of the innovation will occur. Thus, I posit that among the three functions

performed by organizing visions legitimation takes the center stage by either subsuming or mediating effects of the other two.

As a fairly new concept in the IT innovation diffusion domain, the organizing vision framework has yet to generate a significant volume of empirical research. Nonetheless, over the last several years there has been a steady growth of interest in the subject manifesting in a number of empirical investigations of organizing visions. These studies span a variety of IT innovations ranging from enterprise resource planning systems (Wang and Ramiller 2004) and customer relationship management (Firth 2001) application service provisioning (Currie 2004) and electronic medical records (Davidson and Reardon 2005). In addition, a recent study by Wang and Swanson (2007) looks at the early stages of an organizing vision production for professional services automation, a new class of enterprise software. A review of the aforementioned literature, however, reveals the vast majority of the papers do not attend systematically to either the types of legitimacy that an organizing vision had or had not been granted or general strategies utilized by the propagators of the innovation in order to gain and maintain legitimacy. A lone exception is the study on professional services automation by Wang and Swanson (2007), which addresses the role of legitimation in launching of IT innovations but does not go as far as to identify a range of legitimation strategies available to IT entrepreneurs. Accordingly, the objective of this research is to delve deeper into exploring the legitimation function of organizing visions. To this end, I will examine how different forms of legitimacy interact within a single vision and attempt to delineate a set of strategies employed by IT entrepreneurs to pursue legitimacy of each type.

CHARACTERISTICS OF LEGITIMACY

Management theorists view legitimacy as a central element of organizational existence and survival (Hannan and Freeman 1989; Suchman 1995; Suddaby and Greenwood 2005; Zucker

1989). Numerous studies have demonstrated that the emergence of new organizational forms and practices is contingent on the mechanisms that render these practices appropriate within a system of beliefs shared by members of a social group (Leblebici et al. 1991; Lounsbury 2003). Similar legitimation dynamics have been shown to come into play in the context of diffusion of technological innovations in general (Hargadon and Douglas 2001; Munir and Phillips 2005) and "launching" of IT innovations in particular (Wang and Swanson 2007). A number of researchers have also emphasized the link between legitimation of new practices and the strategic use of persuasive language, or rhetoric, by institutional entrepreneurs (Green 2004; Suddaby and Greenwood 2005). In the remainder of this chapter, I draw upon these developments to further our understanding of the legitimation function performed by organizing visions for IT innovations.

Strategic and Institutional Approaches to Legitimacy

The organizational literature offers a wide range of definitions of legitimacy (see Johnson et al. 2006 for review). Most of these definitions and the subsequent research that builds on them fall under one of the two major research traditions in organization theory, *viz.*, strategic and institutional. The strategic approach depicts legitimacy as an operational resource that organizations employ in order to aid accomplishment of their goals and objectives (Ashforth and Gibbs 1990; Pfeffer 1981). This approach assumes that managers have a high degree of control over the process of legitimation (Suchman 1995). The other end of the spectrum is anchored by the institutional view, which posits that legitimacy "is not a commodity to be processed or exchanged but a condition reflecting perceived consonance with relevant rules… [norms, and beliefs]" (Scott 2001, p. 59). Accordingly, institutional theorists tend to downplay the role of agency in legitimation dynamics (Suchman 1995).

More recent work on legitimacy seeks to integrate the two perspectives. In particular, Suchman (1995, p. 577) in his seminal essay on legitimacy suggested that while institutional environments are "fundamentally constitutive of organizational life" and, thus, play a key role in rendering certain practices legitimate, social actors do have the capacity to carry out strategies aimed at "fostering legitimating perceptions of desirability, propriety, and appropriateness". This integrative approach aligns well with the conceptual foundations of the organizing vision framework (Swanson and Ramiller 1997). The framework embraces the institutional-strategic duality by defining organizing vision as a socially shared meaning structures (i.e., the institutional component), while at the same time portraying them as an outcome of active discursive struggles involving a variety of social actors (i.e., the strategic component). Consequently, in this research I adopt Suchman's view of legitimacy and address both institutional and strategic aspects of the legitimation process.

Key Properties of Legitimacy

Suchman defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, beliefs, and definitions" (Suchman 1995, p. 574). This conceptualization touches upon a number of important properties that are also reflected in other definitions of legitimacy (Johnson et al. 2006). So far as these properties will figure prominently in the ensuing discussion, I address them below in more detail.

First, Suchman's definition suggests that actors in a social group collectively grant legitimacy to a new venture or practice based on considerations determined by a "socially constructed system of norms, beliefs, and definitions." This socially constructed system refers to the institutional framework situated within the focal social group (Scott 2001, p. 59). Importantly, however, this framework is not homogeneous and consists of multiple and often

conflicting beliefs, norms, logics, and rules (Clemens and Cook 1999). One way to capture this diversity is by aligning elements of the institutional framework with the three institutional pillars, *viz.*, regulative, normative, and cultural-cognitive, identified by Scott (2001). Each of these pillars encodes a different set of criteria and, hence, provides a different basis for granting legitimacy.

Second, Suchman defines legitimacy as predicated on a generalized assumption "that actions of an entity are desirable, proper, or appropriate". This characterization suggests that when granting legitimacy constituent actors engage in evaluation of a new practice with regard to its "rightness" and desirability according a certain set of criteria. I will refer to this mechanism as legitimation based on *propriety*. There also exists another legitimation mechanism that does not involve approval of a new practice per se, but is contingent on the actors' perception that the practice constitutes "a valid, objective social feature" (Johnson et al. 2006, p. 57). This mechanism is usually associated in the literature with the spread of knowledge about a new practice (Aldrich and Fiol 1994) and the congruence of this knowledge with the broader cultural beliefs (Suchman 1995). Here, I will refer to this mechanism as legitimation based on *validity*. As I will show later, the two legitimation mechanisms, along with the institutional bases on which legitimacy is granted, are central to identifying different *forms of legitimacy*.

Finally, from the lens of the strategic approach, Suchman's conceptualization of legitimacy implies that legitimacy comes about through a process of construing of a new practice as consistent with elements of the institutional framework (Johnson et al. 2006). This process is driven by symbolic work on the part of practice entrepreneurs that produce, through discourse, "legitimating accounts" linking the practice to a particular element of the framework (Suddaby and Greenwood 2005). Accordingly, to capture these micro-level dynamics that the

entrepreneurs engage in to gain and maintain legitimacy for a new venture, a number of *legitimation strategies* have been outlined in the literature.

Forms of legitimacy and legitimation strategies are the key building blocks that will help me develop a framework through which to examine the legitimation function of organizing visions. Hence, in the following sections I examine and synthesize the major conceptual views concerning these two aspects of organizational legitimacy.

FORMS OF LEGITIMACY

A number of frameworks delineating major forms of legitimacy are available in the literature (Aldrich and Fiol 1994; Stryker 1994; Suchman 1995). Although there is some variation in labels and definitions used, I argue that fundamentally most frameworks comprise two key dimensions. The first dimension concerns the *institutional basis* on which legitimacy is granted – that is, it reflects which institutional pillar a new venture is aligned with. The second dimension encompasses the *legitimation mechanism* in play (i.e., propriety vs. validity – see the discussion above). This common "coordinate plane" makes it possible, in my opinion, to integrate the frameworks. Below I examine major conceptualizations of legitimacy forms, position each form along the two categorization dimensions, and discuss how each form is represented in the organizing visions research. I conclude the section by developing a unified typology of legitimacy.

Cognitive Legitimacy

A type of legitimacy common across all the major frameworks is that of cognitive legitimacy (Aldrich and Fiol 1994; Stryker 1994; Suchman 1995). Aldrich and Fiol provide, perhaps, the most straightforward definition of this type of legitimacy noting that cognitive legitimacy reflects the spread of knowledge about a new venture or practice among social audiences. Building on this definition, Suchman identifies two variants of cognitive legitimacy: (1) legitimacy based on

comprehensibility and (2) legitimacy based on taken-for-grantedness. The former, comprehensibility, is predicated on the availability of plausible and coherent accounts that explain existence of a new venture in the context of dominant belief systems. The latter form, taken-for-grantedness, arises when the new venture itself becomes an integral part of the institutional framework governing a particular population. Taken-for-grantedness, hence, can be viewed as the highest form of cognitive legitimation (Aldrich and Fiol 1994). To the extent that such high degree of legitimation is unattainable in the early stages of innovation diffusion, in this thesis I do not discuss taken-for-grantedness in much detail.

In terms of the categorization dimensions, cognitive form of legitimacy is contingent on the alignment of a new practice with the *cultural-cognitive institutional pillar* (Scott 2001) and invokes the legitimation mechanism based on *validity*. In other words, cognitive legitimacy arises when there is a broad awareness about a new practice among actors in relevant stakeholder groups and the practice is perceived as understandable in the context of shared beliefs, logics, and categories prevalent within those groups.

Cognitive legitimacy, and comprehensibility in particular, also receives significant attention in the literature on organizing visions. First, as argued earlier, the interpretation function of organizing visions (Swanson and Ramiller 1997) operates through mechanisms similar to those of cognitive legitimation. More specifically, both aim to reduce cognitive complexity by providing social actors with tenable explanations of the innovation's existence and purpose. Second, Ramiller and Swanson (2003) in their work on the executive response to organizing visions identify two dimensions of critical reception that are congruent with Suchman's (1995) view of comprehensibility. The Interpretability and Plausibility dimensions reflect, respectively, how informative and free of distortion executives find the organizing vision discourse to be. Finally, Wang and Swanson (2007) assess coherence of the discourse on

Professional Services Automation, as a proxy for cognitive legitimacy of an IT innovation in the early stages of its lifecycle. Thus, the emphasis on cognitive legitimacy throughout the organizing visions research speaks to the salience of this form of legitimacy in explaining IT innovation phenomena.

Pragmatic Legitimacy

In addition to cognitive legitimacy, Suchman (1995) identifies a pragmatic form of legitimacy[14], which "rests on the self-interested calculations of an organization's most immediate audiences" (p. 578). These calculations may range from a simple assessment of the venture's direct expected value to the stakeholders to more subtle motives involving, for instance, pursuance of shared interests and goals. Regardless of the specific mechanism, pragmatic legitimacy always involves appraisal of the venture's utility and, therefore, falls under the *propriety* legitimation mechanism. With regard to the institutional basis, I argue that pragmatic legitimacy involves the cultural-cognitive institutional pillar. Indeed, as discussed earlier in Chapter 2 of this thesis, rational calculations of utility always take place within the framework of institutional beliefs and logics, which imbue the very notion of "value" with its situated meaning (Hoffman 2001). Hence, both cognitive and pragmatic forms of legitimacy are associated with the *cultural-cognitive institutional pillar*. The difference between the two is that the latter employs the legitimation mechanism based on *propriety*, while the former – based on *validity*.

Conceptualization of pragmatic legitimacy finds support in the work on organizing visions. Ramiller and Swanson (2003) identify Importance as one of the four dimensions of critical reception of organizing visions. A dominant theme within the Importance dimension is that of Business benefit, which encompasses judgments of potential adopters about the value that

[14] Stryker (1994) also described the *behavioral consent* approach to legitimacy which is conceptually similar to the notion of pragmatic legitimacy. In particular, she argued that the predominant motivation for consent is "instrumental in that consent provides material resources" (p. 856).

an IT innovation is likely to deliver if adopted by an organization. This view of Business benefit is consistent with the conceptualization of pragmatic legitimacy discussed above. Therefore, I expect pragmatic legitimacy to also play an important role in shaping early stages of IT innovation diffusion.

Normative Legitimacy

Normative, or moral, basis for legitimacy also takes a prominent spot in the work of organizational scholars (Scott 2001; Suchman 1995). In general, this form of legitimacy is viewed as predicated on judgments about whether a new venture is consonant with and/or promotes moral norms and values prevalent within a particular social audience. Often, the emphasis here is put on promoting broad pro-social logics of justice and wellfare (Suchman 1995). In this vein, moral legitimacy is fundamentally different from the pragmatic form. The former does not involve considerations of whether "a given activity benefits the evaluator" but rather hinges on a mechanism wherein the constituents view the activity as "the right thing to do" (Suchman 1995, p. 579). This conceptualization implies that the moral form legitimacy is associated with the *normative institutional pillar* and relies on the *propriety* legitimation mechanism.

Despite its visibility in organization theory research, moral legitimacy has not made its way into the literature on organizing visions. For example, Ramiller and Swanson's (2003) work on the executive response to organizing visions does not include a dimension of critical reception corresponding to moral legitimacy. This, however, could be explained by the exclusive focus of their study on IS managers. Perhaps, if the critical reception of general managers, who traditionally are more concerned with the public image of an organization, had been assessed, aspects of moral legitimacy would have garnered more visibility. Due to this reason I retain moral legitimacy in the framework at this point.

Regulative Legitimacy

Drawing on the premise that legitimation takes place through the linking of a social object to a certain element of the institutional framework, regulative legitimacy can be viewed as produced by aligning a new venture with the symbolic systems comprising the *regulative pillar*. In particular, such alignment is usually accomplished by establishing and operating new ventures in accordance with the relevant legal and quasi-legal rules and regulations existing within the field (Scott 2001). Support for ventures that exhibit regulative compliance may be granted because of the mere recognition of the binding nature of these rules or because of their active approval (Stryker 1994). The former scenario, in my view, involves the legitimation mechanism based on *validity*, while the latter operates via the legitimation based on *propriety*.

As discussed earlier, a number of studies suggest importance of regulative legitimation in the IT domain. More specifically, in the context of launching new information technologies such regulative legitimation dynamics may take several forms, such as: (1) emphasizing that an innovation operates in conformance with IT-related policies and directives passed by government and/or international authorities (Jang and Luo 2000; King et al. 1994), (2) stressing that it helps achieve compliance with relevant non-IT regulations, and (3) stressing that it alleviates pressures imposed by resource-dominant organizations, such as powerful retailers and manufacturers, on their business partners to adopt inter-organizational information systems (Teo et al. 2003). Accordingly, I believe that the role of regulative legitimacy in IT innovation diffusion needs to be explored further.

Socio-Political Legitimacy

Finally, Aldrich and Fiol (1994) stress the importance of socio-political legitimation, which they define as "the process by which key stakeholders…accept a venture as appropriate and right, given existing norms and laws" (p. 648). This definition effectively suggests two things. First,

socio-political legitimacy, similar to normative, pragmatic, and regulative forms, involves assessment of a new venture with regard to its desirability. This, in turn, implies that this form of legitimacy relies on the *propriety* legitimation mechanism. Second, criteria employed by social actors in determining desirability of a new venture do not seem to be limited to any particular subset of institutional framework (the definition reads: "...given existing norms and laws"). Hence, socio-political legitimacy may be granted based on *any of the three institutional pillars*. In this light, I argue that socio-political legitimacy essentially encompasses the three forms of legitimacy discussed above, *viz.*, pragmatic, normative, and regulative, and therefore should be viewed as a meta-type rather than a separate variant of legitimacy.

In IS literature, socio-political legitimacy is addressed in the study by Wang & Swanson (2007) on launching IT innovations. These authors operationalize socio-political legitimation as the ability of IT entrepreneurs to convey convincing success stories that "speak to the benefits … (an innovation) might bring to specific users and vendors" (p. 80). Strictly speaking, this, as I will show later, is a strategy for gaining pragmatic legitimacy (Suchman 1995).

Table 1 on page 67 summarizes the above discussion on forms of legitimacy and offers an integrated view of the major legitimacy taxonomies. In addition, Figure 4 on the next page illustrates the mapping of different legitimacy forms with respect to the two categorization dimensions.

LEGITIMATION STRATEGIES

Delineating different forms of legitimacy at a macro-level of analysis is useful insofar as it sets stage for identifying micro-level strategies employed by entrepreneurs to build legitimacy for new ventures. Different types of legitimacy need to be pursued through different cultural means to ensure success of the legitimacy management efforts (Suchman 1995). The organization theory literature, once again, offers a valuable reference point to start building a better

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="3">Institutional Basis</td></tr>
<tr><td>Regulative Pillar</td><td>Normative Pillar</td><td>Cultural-Cognitive Pillar</td></tr>
<tr><td rowspan="3">Legitimation Mechanism</td><td>Validity</td><td rowspan="2">Regulative Legitimacy</td><td>NA</td><td>Cognitive Legitimacy</td></tr>
<tr><td rowspan="2">Propriety</td><td>Moral Legitimacy</td><td>Pragmatic Legitimacy</td></tr>
<tr><td colspan="3">Socio-Political Legitimacy</td></tr>
</table>

Figure 4: Forms of Legitimacy: Institutional Bases and Legitimation Mechanisms

understanding of how these micro-level dynamics unfold in the context of IT innovations. A number of case studies (Munir and Phillips 2005; Suddaby and Greenwood 2005) and conceptual frameworks (Aldrich and Fiol 1994; Suchman 1995) describe general entrepreneurial approaches to legitimation of new ventures and practices. Building upon these studies, I compiled a list of generic legitimation strategies aimed at fostering different forms of legitimacy.

While I tried to incorporate insights from a variety of different studies on legitimation, two general frameworks were dominant in guiding my thinking at this point. First, I continued to draw upon the seminal work on legitimacy by Suchman (1995) who, in addition to developing a general taxonomy of legitimacy, outlined major strategies for gaining, maintaining, and repairing pragmatic, moral, and cognitive forms of legitimacy. Second, I gleaned ideas from the study by Aldrich and Fiol (1994) concerning how founding entrepreneurs in emerging industries pursue cognitive and socio-political forms of legitimacy. The resulting list of generic legitimation strategies, classified by legitimacy form, is presented in Figure 5 on page 68.

The four forms of legitimacy shown in Figure 5 are conceptualized at a high level of abstraction and can, therefore, accommodate a wide range of new practices, including IT innovations. Legitimation strategies, on the other hand, encompass ground-level efforts of practice entrepreneurs and, thus, need to reflect particulars of the domain where legitimation

Table 1: Forms of Legitimacy - Summary

Legit. Form	Aldrich & Fiol (1994)	Suchman 1995	Scott (2001)	Ramiller & Swanson (2003)
Cognitive	**Cognitive legitimacy** – refers to the spread of knowledge about a new venture. • Taken-for-grantedness – the highest form of cognitive legitimacy	**Cognitive legitimacy** – based on cognition (understanding) rather than on interest (i.e., pragmatic legitimacy) or evaluation (i.e., moral legitimacy). • Comprehensibility - (predictability, plausibility) • Taken-for-grantedness	**Cultural-cognitive** – basis of legitimacy – comprehensible, recognizable, culturally supported • Density-dependent mechanisms	**Interpretability** – reflects how intelligible and informative the executives find the representations of the OV and its associated public discourse **Plausibility** – focuses on distortions in the discourse, emphasizing in particular the burdening of the OV with misunderstandings, exaggerations, and misplaced claims **Market interest**
Pragmatic	**Socio-political legitimacy –** refers to the process by which key stakeholders, the general public, key opinion leaders, or government officials accept a venture as appropriate and right, given existing norms and laws.	**Pragmatic legitimacy** – rests on self-interested calculations of an organization's most immediate audiences	*Not addressed*	**Importance** – implies the power of influencing quality of having evident value either generally or in a particular relation and often by merely existing • Business benefit • Practical acceptance
Normative		**Moral legitimacy** – reflects a positive normative evaluation of an organization and its activities – it rests not on judgments about whether a given activity (innovation) benefits the evaluator, but rather on judgments about whether the activity is "the right thing to do."	**Normative** – basis of legitimacy – morally governed	*Not addressed*
Regulative		*Not addressed*	**Regulative –** basis of legitimacy – legally sanctioned	*Not addressed*

takes place. Accordingly, the generic legitimation strategies, identified *a priori* through the synthesis of the relevant organization theory literature, cannot not be applied "as is" to IT innovations. In the next chapter, I describe a historical case study looking at how IT entrepreneurs sought to build legitimacy for an organizing vision of an IT innovation in the field of healthcare. Through this case study I extend the generic legitimation strategies to construct a framework aimed specifically at capturing legitimation dynamics in the IT innovation domain.

Pragmatic Legitimacy	**Moral Legitimacy**
1. Respond to needs – meet the substantive needs of various audiences (i.e., respond to client tastes). Demonstrate results. 2. Advertise product – persuade constituents to value the innovation offerings 3. Co-opt constituents – build alliances with potential constituents; highlight (exaggerate) the extent of constituent participation in the innovation 4. Build reputation – trade on the organization's strong reputation in related activities 5. Develop legitimacy by organizing collective marketing and lobbying efforts	1. Produce proper outcomes – produce concrete meritorious outcomes 2. Embed in institutions – embed new practices in established institutions (e.g., through co-optation of respected entities) 3. Offer symbolic displays – portray outputs, procedures, and structures as conforming to moral norms 4. Proselytize
Cognitive Legitimacy	**Regulative Legitimacy**
1. Mimic standards - mimic most prominent and secure entities in the field 2. Formalize operations – codify informal procedures 3. Professionalize operations – link activities to external definitions of authority and competence 4. Seek certification 5. Establish and promote new standards and models 6. Develop knowledge by promoting activity through third-party actors	1. Signal that the new practice operates in accord with relevant laws and regulations

Figure 5: Forms of Legitimacy and Generic Legitimation Strategies

CHAPTER 4: CASE STUDY – BUILDING LEGITIMACY FOR IT INNOVATIONS

Given the lack of prior empirical research on the legitimation function of organizing visions, I conducted an exploratory case study (Yin 2002) to examine the legitimating discourse of IT vendors, a prominent group of entrepreneurs involved in launching of IT innovations. The objectives of the study were twofold: (1) by building upon the literature analysis discussed in the previous chapter, to construct a taxonomy of discursive strategies for gaining and maintaining legitimacy for IT innovations; (2) to assess explanatory power of the taxonomy through a post-hoc analysis of temporal and cross-sectional patterns in the vendors' use of legitimation strategies. The two objectives were addressed, respectively, in Phase I and Phase II of the study.

CASE DESCRIPTION

For the case study, I analyzed vendor discourse surrounding the IT innovation of CPOE systems. The acronym CPOE stands for "computerized physician order entry" (or, alternatively, "computer-based provider order entry"). CPOE is a clinical information system that enables a patient's care provider to enter orders for drug therapy, diagnostic tests and requests for consultations, which are then transmitted to the appropriate department or individual to be carried out. CPOE systems also incorporate clinical decision support functions such as computerized reminders, prompts and advice regarding issues such as drug selection, doses, interactions, drug allergies and the need for corollary orders (Kaushal et al. 2003). CPOE was selected as the case for this study for theoretical reasons – it provided the opportunity to study an IT innovation in the early stages of diffusion. A survey by The Leapfrog Group at the end of 2004 (http://www.leapfroggroup.org/media/file/Leapfrog-Survey_Release-11-16-04.pdf) found that only 4% of hospitals had fully implemented CPOE, but another 16% planned to implement it

by 2006. It is during these early stages that the entrepreneurs are actively engaged in theorizing (Strang and Meyer 1993; Tolbert and Zucker 1996) by spreading the ideas about the new practice among constitutive audiences and shaping their beliefs that the practice has merit (Green 2004). Therefore, I would expect the vendor discourse during this period to provide ample examples of the use of legitimation strategies aimed at fostering different forms of legitimacy. While various stakeholder groups are involved in the entrepreneurial community that launches and maintains the discourse surrounding a focal IT innovation (Wang and Swanson 2007), I chose to examine the discursive actions of vendors as a primary group expected to be highly engaged in legitimating and shaping beliefs during this stage.

DATA COLLECTION

The source of data for the study was *PR Newswire*, a news distribution service database containing full-text, unedited news releases as written by the originators. Press releases are overt discursive actions by organizations. Releases are used for public relations, marketing, etc. and written in a form that can easily be used by journalists in their own news reporting (Strobbe and Jacobs 2005). For this study, press releases issued from 1980 through 2005 were searched for the terms "CPOE," "computerized physician order entry," "physician order entry," "clinician order entry," and "provider order entry," yielding a total of 310 articles. 70 press releases from sources other than vendors (e.g., market research organizations, professional societies) and 98 press releases by vendors where CPOE was not a primary topic (e.g., financial reports, announcements of management changes) were eliminated from further analysis. The remaining 142 press releases by software, hardware and services vendors with CPOE as a major topic were included in the content analysis. Counts of releases by year (see Figure 6) show a steady increase

from the first occurrence in 1998 through 2005, although in 2004-2005 the growth appears to have stabilized.

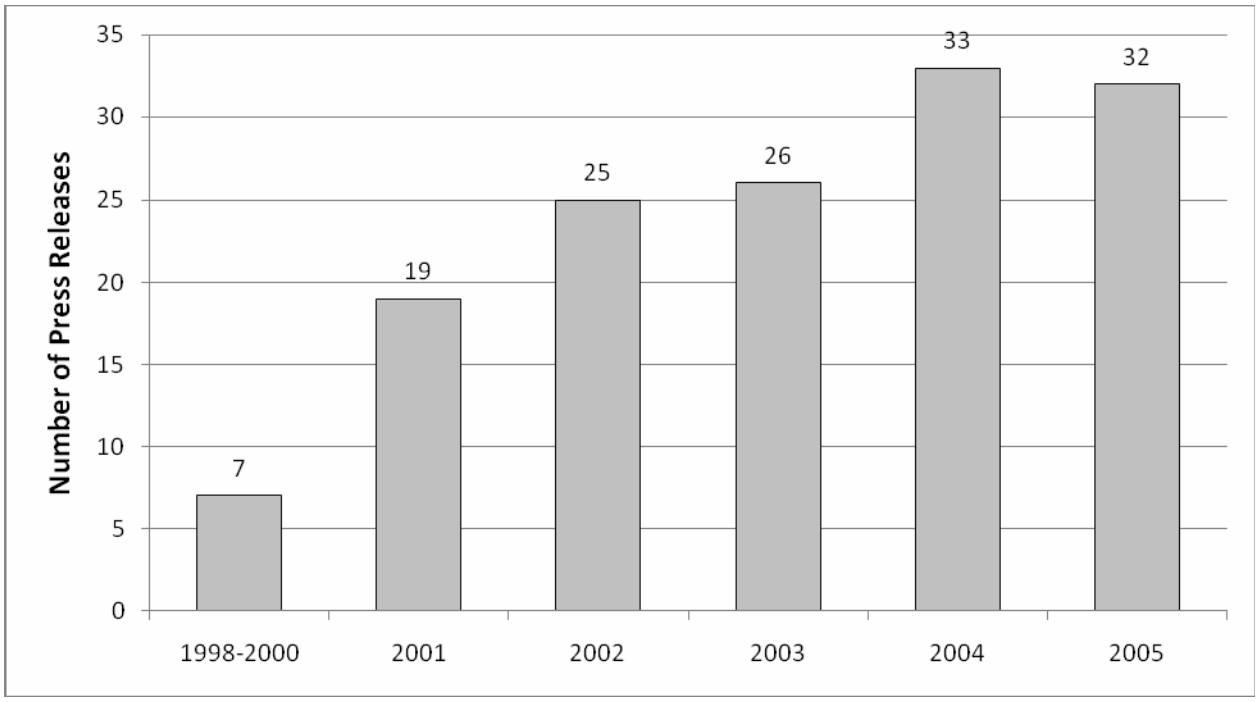

Figure 6: Number of CPOE Press Releases by Year

DATA ANALYSIS

Analysis of the vendor press releases was carried out in two phases, each one addressing a separate research objective. In Phase I, I analyzed a subset of press releases through an inductive coding process aimed at refining the generic legitimation strategies and constructing a taxonomy of discursive strategies for gaining and maintaining legitimacy of IT innovations (IT legitimation taxonomy, hereafter). In Phase II, I used the taxonomy developed in Phase I to code the entire text corpus of press releases. Further, I utilized the results of this coding to explore patterns in the vendors' use of the legitimation strategies. I drew upon the finding of the pattern analysis to offer preliminary conclusions with regard to the explanatory power of the IT legitimation taxonomy. Below I discuss the methods employed in each phase in more detail.

Phase I: Construction of the Legitimation Taxonomy

To construct a complete taxonomy of discursive strategies for gaining and maintaining legitimacy of IT innovations, I employed the following content-analytical procedure[15]. I entered the analysis with a broad two-level conceptual framework grounded in the existing legitimacy literature. The level-one categories of the framework were comprised by the four forms of legitimacy, *viz.*, cognitive, normative, pragmatic, and regulative; the level-two categories encompassed the four corresponding sets of generic legitimation strategies (see Figure 5 in the Chapter 3). I kept the level-one categories fixed throughout the analysis and employed an iterative coding process to refine the level-two categories. The idea was to use the generic strategies as a starting point to aid in the identification and interpretation of themes emerging from the CPOE dataset. The ultimate goal of this process was to elicit legitimation strategies specific to the IT innovation domain.

To accomplish this goal, three successive samples of ten documents each, stratified by year and vendor, were drawn from the data set and coded. I used Atlas.ti software to facilitate the coding process. A coding unit was defined as a text segment no smaller than a sentence and no bigger than a paragraph. Multiple codes were allowed to be assigned to a single text segment. During the coding, each generic strategy was either modified to reflect the IT domain particulars, merged with another strategy to achieve conceptual parsimony, or dropped if no matching discursive dynamics were detected in the data. In addition, several new codes were added to the taxonomy to account for strategies not present in the generic set.

After the third iteration of coding, no further modifications were necessary, and the taxonomy was deemed to have reached theoretical saturation. At that point, I compiled a coding

[15] Content analysis has been shown to be an appropriate and effective methodology for identifying elements of cultural toolkits (Weber 2005).

protocol and transferred to it to the second researcher, who independently coded a random sample of ten documents (drawn from the thirty documents used to develop the register). Inter-coder reliability was assessed both at the aggregate level and for individual codes (i.e., legitimation strategies). At the aggregate level, 82.5% agreement rate and 0.554 Cohen's Kappa were recorded, suggesting a moderate level of agreement (Landis and Koch 1977). I also examined percent agreement values for individual codes (see Table B2 in Appendix B) in order to identify areas where most coding discrepancies occurred. After the discrepancies were evaluated and reconciled, I finalized the coding protocol and constructed the final version of the legitimation taxonomy.

Phase II: Evaluation of Legitimation Patterns

Once the IT legitimation taxonomy was established, I coded the entire data set of vendor press releases using the final version of the coding protocol. Once again, a text segment was selected as a coding unit and multiple codes were allowed to be assigned to a single segment. For instance, three codes, viz., P15 Reputational-adopter, P2 Value-clinical-rational, P5 Value-operational-rational, were assigned to the following segment of text:

> "Siemens INVISION CPOE and clinical documentation solutions were critical components of 2003 Nicholas E. Davies Award of Excellence winner Cincinnati Children's Hospital Medical Center's (CCHMC) Integrating Clinical Information System, which is delivering outcomes that include reduced medical errors and medication turnaround time…" (PR Newswire. February 17, 2004, Siemens Medical Solution)

After coding of all press releases was completed, I examined the results to identify patterns in the use of legitimation strategies by the CPOE vendors. To this end, the original code-by-document matrix was dichotomized to produce a binary matrix showing only the presence or absence of a code (i.e., strategy) in a primary document (i.e., press release). The binary matrix was then utilized to compute two key measures for the pattern analysis. The first measure

concerned the *salience* of a strategy and was computed as a ratio of the number of press releases containing strategy X to the total number of press releases (or, in case of the temporal analysis, the total number of press releases for a given year). I employed the salience scores to assess the overall use of legitimation strategies by the vendors as well as the temporal legitimation patterns. The second measure reflected the relative *emphasis* on a strategy within the legitimation repertoire of a particular vendor. This measure was computed as the ratio of the number of instances of strategy X identified in all of Vendor Y's press releases to the total number of strategy codes identified in all of vendor Y's press releases[16]. I employed the emphasis scores to examine the cross-actor legitimation patterns.

RESULTS AND DISCUSSION

Similar to the section describing the data analysis approach, I organize the discussion of finding in two parts. Part one concerns Phase I of my research and presents a detailed discussion of the four clusters of legitimation strategies comprising the IT legitimation taxonomy. In this part, I also reflect upon the individual strategies within each cluster and provide their empirical examples. Part two addresses research objectives of Phase II of the study. Here, I evaluate temporal and cross-actor patterns in the CPOE vendors' utilization of legitimation strategies. I offer my interpretation of the logic underlying these patterns and draw tentative conclusions about the explanatory usefulness of the proposed legitimation taxonomy.

Phase I: Construction of the Legitimation Taxonomy

The final version of the legitimation taxonomy comprises 26 discursive strategies. The majority of these strategies, fifteen, are aimed at pragmatic legitimacy, eight are aimed at cognitive legitimacy, two – at moral legitimacy, and one – at regulative legitimacy. Table 2 pages 76-76

[16] The data used to compute the emphasis scores were binary – that is, only one instance of any given strategy could be assigned to a single press release.

shows the twenty six legitimation strategies along with their short descriptions and central themes. Additionally, press release excerpts illustrating each strategy are provided in Table B1 in Appendix B. Below I offer general observations about each group of strategies and discuss their theoretical grounding.

Cognitive Legitimation Strategies

Cognitive legitimacy is predicated on the spread of knowledge about the innovation (Aldrich and Fiol 1994). So far as the early stages of diffusion are characterized by high ambiguity surrounding a new practice, communication efforts are required on the part of innovation entrepreneurs to help constitutive audiences better understand and interpret the innovation's key properties and applications (Attewell 1992; Swanson and Ramiller 1997). To accomplish their legitimation function, such explanatory accounts must mesh with the audiences' broader belief systems (Suchman 1995). As the knowledge spreads, comprehensibility of an innovation increases, and so does its cognitive legitimacy. I identified three groups of strategies that IT vendors employ to pursue the cognitive form of legitimacy.

System-Related Strategies: The first group of strategies aimed at enhancing comprehensibility of an innovation is focused on communicating to potential adopters and other stakeholders what the innovation, as an information system, is all about. This group encompasses three legitimation strategies concerning the innovation's functionality, configuration, and general characteristics.

C1 System-Functionality strategy comprises claims centered on defining key attributes, features, and usage conditions of the innovation. More specifically, C1 included such discourse elements as laundry lists of features (e.g., "system to place orders, prescribe medication, review results, chart vital signs and flow sheets, add or view notes, and alert clinicians to abnormal

Table 2: IT Legitimation Taxonomy

Code	Strategy Name	Strategy Description	Central Themes
C1	System – functionality	Explicitly define key features, attributes, and usage conditions of the innovation	Laundry lists of features, specific description of features, application areas, suite description
C2	System – configuration	Explicitly define key characteristics of the underlying IT artifact	Software/hardware architecture, database characteristics, outsourcing
C3	System – characteristics	Describe general characteristics of the innovation. Align these characteristics with the current technological best practices	Integration/interoperability, scalability, reliability, security, user-friendliness
C4	Implementation – strategies	Describe implementation strategies/success factors	Proprietary and generic implementation methodologies and tools, strategies to promote user acceptance
C5	Implementation – successes	Demonstrate implementation successes (examples)	On-time activation, smooth seamless migration, high adoption rates, user satisfaction
C6	Implementation – challenges	Discuss challenges/risks associated with the innovation	Gaining user acceptance, high investment cost, implementation complexity
C7	Diffusion – organizational	Describe positive market response to the innovation; emphasize ongoing development of the innovation	Adoption/upgrade instance, increasing demand for/penetration of the innovation, release of the new version of the innovation
C8	Diffusion – end user	Stress acceptance of the innovation by end users	Wide acceptance/utilization of the innovation
P1	Value – clinical – rational	Explain how the innovation improves quality of medical care in an adopter organization	Patient safety, quality of (patient) care, medical errors, clinical outcomes
P2	Value – clinical – success story	Provide examples of how the innovation improves quality of medical care in an adopter organization	Specific examples of the P1 themes
P3	Value – financial – rational	Explain how the innovation improves financial performance of an adopter organization	Cost-effectiveness, financial well-being, financial savings
P4	Value – financial – success story	Provide examples of how the innovation improves financial performance of an adopter organization	Specific examples of the P3 themes
P5	Value – operational – rational	Explains how the innovation improves operational performance of an adopter organization	Efficiency, streamline/improve workflow or specific tasks/processes, productivity
P6	Value – operational – success story	Provide examples of how the innovation improves operational performance of an adopter organization	Specific examples of the P5 themes
P7	Value – business – rational	Explain how the innovation improves general business performance of an adopter organization	Achieving strategic goals, achieving customer satisfaction, managing personnel

(table 2 continued)

P8	Value – business – success story	Provide examples of how the innovation improves general business performance of an adopter organization	Specific examples of the P7 themes
P9	Value – IT – rational	Explain how the innovation improves management of IT in an adopter organization	Total cost of ownership of the innovation, use IT strategically, maximize IT investment, improve management of IT operations
P10	Value – IT – success story	Provide examples of how the innovation improves management of IT in an adopter organization	Specific examples of the P9 themes
P11	Alliance – adopter	Advertise collaborative long-term relationships with adopters	Common vision/goals, strategic/long –term collaboration, shared success in deploying the innovation
P12	Alliance – vendor	Advertise partnerships/ collaborations with other innovation entrepreneurs (e.g., vendors, consultants)	Leveraging mutual strengths to improve the innovation or the implementation process
P13	Alliance – field-level actor	Advertise affiliation with influential field level actors	Governmental agency, non-profit organization (e.g., think tank, research foundation), professional organizations, special interest groups (e.g., Leapfrog), conference/trade show/exhibition
P14	Reputation – vendor	Emphasize the innovation entrepreneurs' strong reputation in the innovation domain and related areas	Reputation in a particular area, leadership in the field, reputation in a related domain, prior track record, awards
P15	Reputation – adopter	Describe (favorable) characteristics/stress reputation of the adopter organization	Leadership in a certain area, award winner, organization size/market share
N1	Normative - moral	Stress congruence of the innovation with prevailing moral norms; provide examples	Value of life, well-being of patients, enhancement of work experience
N2	Normative - transformation	Emphasize the ongoing transformation of the adopters' industry; stress the enabling role of the innovation	Industry transformation, new era, changing paradigm, enabling role of the innovation
R1	Regulative - compliance	Stress compliance with legal and quasi-legal rules and regulations	Compliance with the rules of key regulative agencies in the adopter field (e.g., HIPAA, JCAHO)

results or potential conflicts), suite descriptions (e.g., "including Flowsheets, Intake and Output, Problem Management, Care Plans…and Electronic Medication Administration record (eMAR) modules"), descriptions of the application areas that the innovation supports (e.g., "with specialized modules for the emergency room, intensive care unit, the operating rooms, recovery rooms, general care floors"), as well as more detailed accounts of how a particular functionality operates (e.g., "built-in drug prescription capabilities instantly respond with appropriate alerts to patient specific information located within the longitudinal record"). At a general level, this strategy is aimed at conveying to external social audiences *what* an IT innovation can do.

Another system-related legitimation strategy is **C2 System-Configuration**. Unlike C1 that speaks to the capabilities of the innovation, C2 seeks to delineate the mechanism through which these capabilities are delivered. So far as the same set of functional features can be provided via different configurations of information technology, it is important for the stakeholders to know the exact characteristics of the underlying IT artifact. To this end, CPOE vendors focused their efforts on describing particulars of the innovation's software/hardware architecture (e.g., "using the latest technologies, which include an ultra thin client environment, intuitive Internet navigation, and wireless integration", "[system X] is a PDA-based Internet solution", "solutions based on the Microsoft platform and .Net technologies", "built on the HP NonStop™ platform"). Thus, the goal of C2 is to inform the constituent audiences about *how* the innovation can do what it does.

Finally, CPOE vendors engaged in a strategy of showcasing general characteristics of the innovation – **C3 System-Characteristics**. That is, in addition to specific claims conveying *what* the system does (i.e., C1) and *how* it does it (i.e., C2), more general statements regarding *how well* the system performs its functions figured prominently in the vendor discourse. System

characteristics were usually portrayed in relation to current technological best practices, which can be seen as an attempt on the part of entrepreneurs to link the innovation to a subset of existing institutional beliefs. C3 manifestations included, among others, claims concerning a system's performance with respect to integration/interoperability (e.g., "high level of integration if fosters between various [system X] modules"), scalability (e.g., "because of the scalability of our solutions…we can meet the information technology needs of healthcare organizations of virtually any size"), reliability/response time (e.g., "delivers a subsecond response time and 99.9 percent uptime"), security/privacy (e.g., "maintains high levels of security"), and usability (e.g., "due to its innovative and intuitive user interface, [system X] wins accolades from physicians"). Besides, many press releases contained descriptors emphasizing that the innovation is on the edge on the technological and management/clinical progress (e.g., "next generation", "state-of-the-art").

Implementation-Related Strategies: Another group of cognitive legitimation strategies concerns the process whereby an innovation is brought into an organization and integrated into the work environment. Acquiring the knowledge about this process is important for potential adopters to the extent that it renders alleged benefits of the innovation as achievable and within practical reach (Ramiller 2006). Hence, in a way, implementation-related strategies act as a link between system-related strategies, which delineate what an innovation is, and value-related strategies, which spell out the benefits that the innovation is purported to deliver (this group of strategies will be discussed in detail later in the chapter).

Three interrelated strategies were identified within this group. **C6 Implementation-Challenges** strategy comprises discourse aimed at identifying potential risks and pitfalls associated with integrating an innovation into the core processes of an adopter organization.

Most prominent in the vendor discourse were challenges related to gaining clinicians' acceptance of CPOE, high level of initial investment required to acquire and deploy the system, and implementation complexity. These were countered with **C4 Implementation-Strategies** claims directed at suggesting approaches to tackle the implementation challenges. Strategies to promote user acceptance included providing extensive customized user training, soliciting feedback from/collaborating closely with clinicians at all stages of the implementation process, and tailoring the system to the unique workflow of a particular clinical environment. Suggestions to mitigate high start-up investments revolved around "sharing the cost of infrastructure and management among a group of facilities" and "rolling out (process changes) through incremental investments". Finally, high implementation complexity was proposed to be handled through a variety of approaches ranging from rapid 'quickstart' implementation strategies to phased deployments wherein a core basic system is installed first and then expanded "to encompass the full capabilities of the advanced solution". Vendors were also keen to stress that they had access to unique proprietary implementation methodologies and would share these with adopter organizations to ensure success of the implementation process.

C5 Implementation-Success strategy is the last one in the implementation-related cluster of the legitimation taxonomy. Demonstrating success is of paramount importance to any legitimation effort (Strang and Macy 2001; Zbaracki 1998) and, hence, C5 seeks to establish the innovation success in a very narrow yet fundamental sense – in the sense that the innovation is implementable. Implementability, as noted earlier, is essential for an innovation's value proposition to be appreciated by potential adopters. Accordingly, the CPOE vendors invested considerable efforts into showcasing implementation successes. Successes were construed in a number of ways, including on-time activation, on- or under-budget project completion,

smooth/seamless migration, high adoption/utilization rates, and high level of user satisfaction. The vendor's role in accomplishing a successful implementation was also often underscored (e.g., "it was a shared effort and we are happy that it has become a shared success").

Diffusion-Related Strategies: One of the early conceptualizations of legitimacy, stemming from organizational ecology, suggests that legitimacy is a function of the population density of a new organizational form (Hannan and Freeman 1989). As the number of organizations of a given form increases (that is, as its population density goes up) and the form becomes more prevalent within the field, social actors start to regard it "as the natural way to organize for some purpose" (Scott 2001, p. 119). This way an organizational form eventually acquires the status of a reified social fact and gains taken-for-grantedness – the highest form of cognitive legitimacy (Aldrich and Fiol 1994). Although this conceptualization was later criticized as predicated on a circular logic (Zucker 1989), most scholars would still agree that density-dependence plays an important role in instigating the spread of new practices, primarily through the mechanism of organizational imitation, or mimicry (see for example Strang and Macy 2001). In the context of IT innovation diffusion, density translates into penetration rates. Accordingly, claims rendering CPOE as an organizational practice that is becoming widely used within the adopter population were central to the vendor discourse.

C7 Diffusion-Organizational strategy comprised statements stressing positive market response to the innovation and/or the ongoing evolutionary development of the innovation (e.g., upgrades). Unable to cite high overall market penetration rates for CPOE, the vendors focused their attention on highlighting adoption of the software by individual organizations (e.g., "[Corporation X] …today announced that [health system Y], a 132-bed community health system based in …, will deploy [system Z] advanced clinical and financial information

software"), as well as playing up their own customer base (e.g., "over 15,000 physicians and 56,000 nurses in more than 1,300 healthcare organizations, including 160 medical centers and 850 clinics, are currently using [system X]"). Interestingly, when noting the low rate of CPOE adoption the vendors characterized adopting organizations as setting themselves apart from non-adopters (e.g., "part of an elite group", "among the clinical informatics leaders in healthcare"). In addition to showcasing adoption instances, the vendors made announcements about new releases and upgrades of their software suites (e.g., "[Vendor X] announced today that [system Y] release 2003 will be available in March 2003"). I posit that such claims also can be viewed as a manifestation of C7, as they seek to convey the impression that the innovation has survived its first iteration and is naturally progressing to the next version. Such progression implies, in my opinion, that the innovation is becoming more mature, which indirectly reflects on its population density.

C8 Diffusion-End User strategy is similar in purpose to C7 but focuses on acceptance of an innovation by end users rather than on its adoption by organizations (e.g., "physician acceptance of the CPOE software at [hospital X] has been very high, and entering orders has become second nature"). Although C7 and C8 statements were often intertwined in the vendor discourse, I chose to move end-user related claims into a separate category because of the following consideration. Legitimacy is always granted to a new practice by a particular group of actors (what is legitimate for one social group may not be legitimate for another – see Martin and Powell (1994) for example). Hence, emphasizing end-user acceptance may be viewed as a means to pursue legitimacy with social actors who may eventually become users of the system (as opposed to C7, which is directed at management/administration). Depending on the organizational context, securing legitimacy with the end users may be greater or lesser

consequence to the overall success of the innovation legitimation efforts. In case of clinical information systems, C8 becomes of vital importance due to the significant power that physicians enjoy in within the health care system in the U.S.

Pragmatic Legitimation Strategies

Suchman (1995) posits that pragmatic legitimacy encompasses three subtypes: (1) exchange legitimacy – where stakeholders offer support to a new venture because of its expected value to them, (2) influence legitimacy – where stakeholders support the venture because they or other influential actors within the field have been co-opted by the founding entrepreneurs, and (3) dispositional legitimacy – where stakeholders provide support because they regard organizational actors promulgating a new venture as generally "decent" and "of good character". Each of these subtypes underlies a group of pragmatic legitimation strategies discussed below.

Value-Related Strategies: These strategies invoke exchange legitimacy mechanisms by delineating the needs an innovation is designed to address and explaining/demonstrating how the innovation meets those needs. I identified four foci and two types of value-related discourse, producing a total of eight distinct legitimation strategies. The discourse foci reflected the key areas in which organizational performance is generally evaluated and included financial, operational, clinical[17], and general business domains. Performance, of course, is socially constructed and, hence, in each of the four domains the vendors identified relevant evaluation criteria and metrics bounding the space in which the innovation can be shown to generate value. Significantly, in determining the evaluation criteria the vendors drew upon the domain's "best practices", which in turn embodied institutional logics and beliefs prevalent within the target adopter population. This ensured alignment of the innovation with the field's cultural-cognitive

[17] In general, this will be an area specific to the innovation application domain.

institutions and fulfilled the core task of legitimation – that of linking a new venture with a broader cultural framework of beliefs (Johnson et al. 2006).

The difference in means employed by the vendors to demonstrate value of an innovation led me to distinguish between two types of value-related legitimation discourse. One category of claims sought to provide social actors with a *rationale* for why they should consider adoption. These claims performed a theorization function by specifying a generic organizational problem and justifying, on the logical grounds, the innovation as a solution to the problem (Greenwood et al. 2002; Strang and Meyer 1993; Tolbert and Zucker 1996). I called this type of value-related strategies '*rationale'* strategies. The second category of value-related claims complemented *rational* strategies by offering empirical evidence in support of the theorization arguments. As discussed earlier, being able to demonstrate success "in at least some cases that can be examined by others considering adoption" is crucial for the legitimation efforts to be effective (Tolbert and Zucker 1996, p. 183). Therefore, in each of the four focal 'value' areas, the CPOE vendors sought to provide examples of specific organizations that had improved their performance due to the innovation. I used the *'success story'* suffix to denote value-related strategies that pursued this objective.

P1 Value-Clinical-Rational and **P2 Value-Clinical-Success Story** strategies aimed to establish the innovation's value in its immediate application domain, that of clinical services. In this vein, CPOE systems were purported to improve medical care in terms of "patient safety", "quality of care", "error prevention ", and "clinical outcomes". Explanations of how the innovation will help achieve these improvements ranged from general statements (e.g., "enabled us to enhance our clinicians' abilities to provide excellent medical care to patients") to more specific accounts (e.g., "an example of how information technology can reduce errors is through

recognizing a patient drug allergy"). The latter category was also often intertwined with descriptions of the system functionality and configuration, as the vendors tried to make their claims more substantial and credible (e.g., "[system X] provides caregivers with the right decision support at the point of care using …handheld scanner and …, providing enhanced safety at the bedside"). Success stories were usually presented in terms of measurable improvements achieved by an adopter organization on one of the above performance criteria (e.g., "the organization recently documented a 60 percent reduction in preventable adverse drug events as a result of the technology").

In general, all value-related strategies followed the pattern described above for the clinical strategies. **P3/P4 Value-Financial-Rational/Success Story** strategies focused on how the innovation would enable adopters to boost revenue and reduce costs through improving "cost-effectiveness of medical care" and "maximizing resources and reimbursements". Success stories in this domain revolved around the amount of cost savings adopter organizations had enjoyed as a result of the CPOE deployment (e.g., "the solution has resulted in an estimated $2 million in annual savings"). Similarly, **P5/P6 Value-Operational-Rational/Success Story** strategies drew upon their own set of business logics, the one encompassing considerations of efficiency, productivity, and workflow. CPOE systems were portrayed as promising significant improvements in this area because of their ability to automate clinical tasks (e.g., "by automating functions, such as … physicians orders, documentation and prescription writing, the system helps [hospital X] streamline workflows"), improve collaboration across the continuum of care (e.g., "the connected enterprise operates efficiently"), and provide easy real-time access to required clinical information (e.g., "the software solution brings complete, real-time patient information directly to the point of service, enabling faster a more efficient care delivery").

Success stories described improvements in hospital-wide cycle-times (e.g., “a 52% improvement in medication turnaround times”) as well as gains in personal productivity (e.g., “saving physicians an estimated 30 to 60 minutes per shift”).

Another group of value-related strategies encompasses rhetoric emphasizing improvements in areas that cannot be readily categorized into the three performance categories discussed above. While statements comprising this strategy address a fairly diverse set of issues, the common thread here is that these issues concern the challenges faced by all business organizations, regardless of the industry they belong to. In particular, **P7/P8 Value-Business-Rationale/Success Story** strategies, as I call them, stressed improvements in customer service/satisfaction (e.g., “they will benefit from increased patient satisfaction”), the ability to attract and retain better professional staff (e.g., “the system will help our recruiting efforts by attracting new physicians who value the role of technology”), as well as included more general claims concerning fulfillment of an organization’s mission and business goals and strengthening of its leadership position (e.g., “[system X] play an extremely important role in helping us achieve our strategic objectives”).

Finally, the last pair of value-related strategies pertains to the impact of an innovation on management of IT function in an adopter organization. The dominant theme in this group of strategies, which I labeled **P9/P10 Value-IT-Rational/Success Story** strategies, was maximizing return on IT investment (e.g., “[system X’s] web-centric architecture expected to minimize the overall cost of system ownership”), In addition, the vendors made references to the innovation’s conformance to IT industry standards (e.g., “technology vision that center around the development of software based on industry standards such as Extensible Markup Language (XML) and Web services”) and its integration with legacy applications (e.g., “an architecture

that allows an innovation to be incorporated without requiring complete – and costly – platform replacement").

Alliance-Related Strategies: Legitimation strategies in this cluster are directed towards *influence* subtype of pragmatic legitimacy. Influence legitimacy, as discussed above, arises when an entrepreneur co-opts constituents by incorporating their interests and goals into its own policies or adopting their performance standards as its own (Suchman 1995). Commitment to a common set of goals, even if just declared, is likely to prompt organizational actors supporting these goals to grant legitimacy to a new venture or practice that is being promoted by the entrepreneur. The CPOE vendors pursued influence legitimacy through building and advertising alliances and long-term relationships with field-level actors, adopter organizations, and other vendors.

So far as influence legitimacy is predicated on establishing common goals, signaling commitment to an agenda that is widely shared within the target organizational field promises the greatest dividends to the entrepreneur. Accordingly, affiliating the innovation with the interests of influential field-level actors proved to be a prominent strategy in the legitimation arsenal of IT vendors. More specifically, **P13 Alliance-Field-Level Actor** strategy drew upon statements citing general endorsements of IT in healthcare, or CPOE systems in particular, by professional groups (e.g., American Medical Association, American Society of Health System Pharmacists), associations of insurers and payers (e.g., The Leapfrog Group), and government officials (e.g., "In his recent State of the Union address, President Bush called for a more aggressive use of medical technology to reduce the number of medical mistakes, which in turn drive up healthcare costs."). Also noted were collaborative research studies involving respected healthcare organizations and professional groups (e.g., "the American Society of Health System

Pharmacists (ASHP) Foundation, in partnership with *[vendor X]*, announced its first U.S. healthcare site for its Failsafe Medication Management System Design (F.M.M.S.D.) study").

Next, the vendors employed **P11 Alliance-Adopter** strategy that sought to portray the relationship between the vendors and their customers as long-term partnerships and ongoing collaborations (e.g., "our collaborative partnership enables this shared vision to become reality"). The main objective of these claims was to convince potential adopters that the vendor shares their vision and concerns and, therefore, will pursue their interests as its own. This strategy also partially overlapped with the C4 Implementation-strategy discourse, as the vendor-adopter partnership was often discussed in the context of ensuring successful deployment of CPOE systems. In this sense, P11 helped highlight implementability of the innovation.

Finally, CPOE vendors made use of **P12 Alliance-Vendor** strategy by publicizing alliances with other vendors (or 'producer' firms), usually those with expertise in complimentary areas (e.g., "[vendor X], an international provider of clinical applications ... to the healthcare industry, and [firm Y], an international law firm and HIPAA industry leader, announced today their strategic relationship"). This strategy, in my opinion, was directed primarily towards developing legitimacy of the innovation not among potential adopters but among other actors, such as consultancies and third-party vendors, whose joint participation in the entrepreneurial community is essential for the innovation launch to be successful. This finding corroborates the interrelationship between the legitimation and mobilization functions of organizing visions, posited earlier in this thesis.

Reputation-Related Strategies: The last group of pragmatic legitimation strategies pursues dispositional legitimacy. Suchman (Suchman 1995, p. 578) defines dispositional legitimacy as stemming from positive, if naive, evaluations of an organization and its policies as

"honest", "trustworthy", "decent", and "wise". To foster such evaluations the CPOE vendors engaged in building up and promoting their own reputation as well as in trading on the reputation of their customers.

P14 Reputation-Vendor strategy comprised statements emphasizing firm characteristics that reflect favorably on the vendor's reputation. These characteristics included expertise in a particular aspect of IT (e.g., "[vendor X's] highly regarded implementation, remote hosting and outsourcing services"), leadership in a certain application area (e.g., "the leader in information solutions for scientific and healthcare professional"), prior performance track record (e.g., "[vendor X] demonstrated proven capabilities in supporting CPOE in complex teaching environments such as ours"), and previous experiences in related domains (e.g., "our databases have been relied on by hospital pharmacist for many years"). Displaying awards and other signs of formal recognition of vendor's accomplishments was another commonly used approach (e.g., "[vendor X's] enterprise clinical system placed among the top three vendors in three separate categories of the Spring 2001 [analyst Y] Performance Report"). Finally, a number of actors sought to bolster their organizational reputation by drawing on the personal stature of their key executives (e.g., "one of the nation's leading designers of hospital-based clinical information technologies is joining the staff of [vendor X]"). Such "dispositional spillovers" are a necessary legitimation technique in the early stages of diffusion when founding entrepreneurs often lack established track record of consistent performance (Suchman 1995).

P15 Reputation-Adopter strategy represents another attempt on the part of the vendors to leverage dispositional spillovers. In this case, the firm's customers – adopter organizations – provided an external source of reputation to build dispositional legitimacy for the innovation. Rhetorical means employed to carry out P15 were similar to those of P14 and included

statements highlighting the leadership position of a healthcare provider (e.g., "[hospital X] is one of the most prestigious healthcare organizations in the world") and showcasing awards won by the organization or its staff (e.g., "its staff includes more than 100 physicians who were chosen for inclusion in Best Doctors in America, a nationally recognized database").

Normative Legitimation Strategies

Normative legitimacy, as discussed earlier, is based primarily on altruistic pro-social logic of promoting societal justice and well-fare. This makes normative, or moral, legitimation more difficult to accomplish through strategic self-interested manipulations than pragmatic or cognitive legitimation (Suchman 1995). Nevertheless, this research showed that IT entrepreneurs do engage in strategies aimed at building up moral base of the innovation's legitimacy.

N1 Institution-Moral-Alignment strategy was evident in the vendor rhetoric around themes concerning the value of life, the well-being of patients, and enhancement of the work experience. Statements, such as "knowing that [system X] can save even one life," "healthcare that leaves no one behind," "it will make me and my peers better physicians," and "professional empowerment of nurses", were made to resonate with broader moral norms and beliefs. While the main emphasis of N1 was on the life-saving implications of CPOE systems, the vendors also spent considerable effort on trying on align both their own and their customers' visions and goals with key moral themes (e.g., "we share a common vision of advancing world-class pediatric care and research capabilities to our local communities and to children around the world.")

N2 Normative-Transformation strategy comprises another category of the vendor discourse that I classified as normative legitimation. It does not invoke moral values per se, but rather builds upon societal expectations for progress. These expectations, or norms, require organizations to perpetually change and managers to use new and improved techniques to deal

with the shifting environment[18] (Abrahamson 1996; Avgerou and Madon 2004). In this vein, CPOE vendors used rhetoric emphasizing the ongoing fundamental transformation of the healthcare industry and stressing the enabling role of new information technologies in helping organizations adapt to the new conditions (e.g., "this is the beginning of a completely new era of information technology in health care"). Terms like "new standard of care", "industry momentum", "changing paradigm", "revolution that has to take place" formed the backbone of the N2 legitimation vocabulary.

Regulative Legitimation Strategies

Lastly, CPOE vendors employed **R1 Institution-Regulative-Compliance** strategy to pursue regulative form of legitimacy. Strictly speaking, IT innovations can be granted regulative legitimacy only if their use is mandated by a formal authority. In most cases, including CPOE systems, this is not a realistic scenario. Nonetheless, practice entrepreneurs may manage to score points in the area of regulative legitimacy by convincing others that the innovation can help potential adopters become complaint with rules and regulation that are formally enforced within the field. To this end, the vendors produced justifications of the role of CPOE systems in achieving compliance with industry-wide regulations, such as HIPAA[19] and JCAHO[20] standards (e.g., "such capabilities will permit [hospital X] to share HIPAA-compliant medical information"), as well as conforming to rules established by state and local agencies (e.g., "a solution that will address the authentication requirements set forth by the Ohio State Board of Pharmacy").

[18] Norms of managerial progress and norms of rationality, prevalent in the Western societies, have been shown to be key drivers of management fashions (Abrahamson 1996, Abrahamson and Fairchild 1996).
[19] HIPAA stands for Health Insurance Portability and Accountability Act
[20] JCAHO stands for Joint Commission on Accreditation of Healthcare Organizations

Phase II: Evaluation of Legitimation Patterns

In this section I discuss patterns in the use of legitimation strategies by CPOE vendors. In particular, I focus on three types of patterns: (1) patterns in the overall use of legitimation strategies by all vendors, (2) temporal patterns in the use of legitimation strategies by all vendors, and (3) patterns in the use of legitimation strategies by individual vendors (i.e., cross-actor patterns). By interpreting the detected variations, I seek to evaluate the insights that the IT legitimation taxonomy generates when applied as a research lens to an empirical data set. In other words, the key objective of Phase II is to assess the explanatory power of the taxonomy, and hence its potential usefulness for future research. My analysis at this point is exploratory and conclusions tentative.

Patterns in the Overall Use of Legitimation Strategies

Figure 7 below shows the percentage of press releases containing at least one statement reflecting each of the types of legitimation strategies.

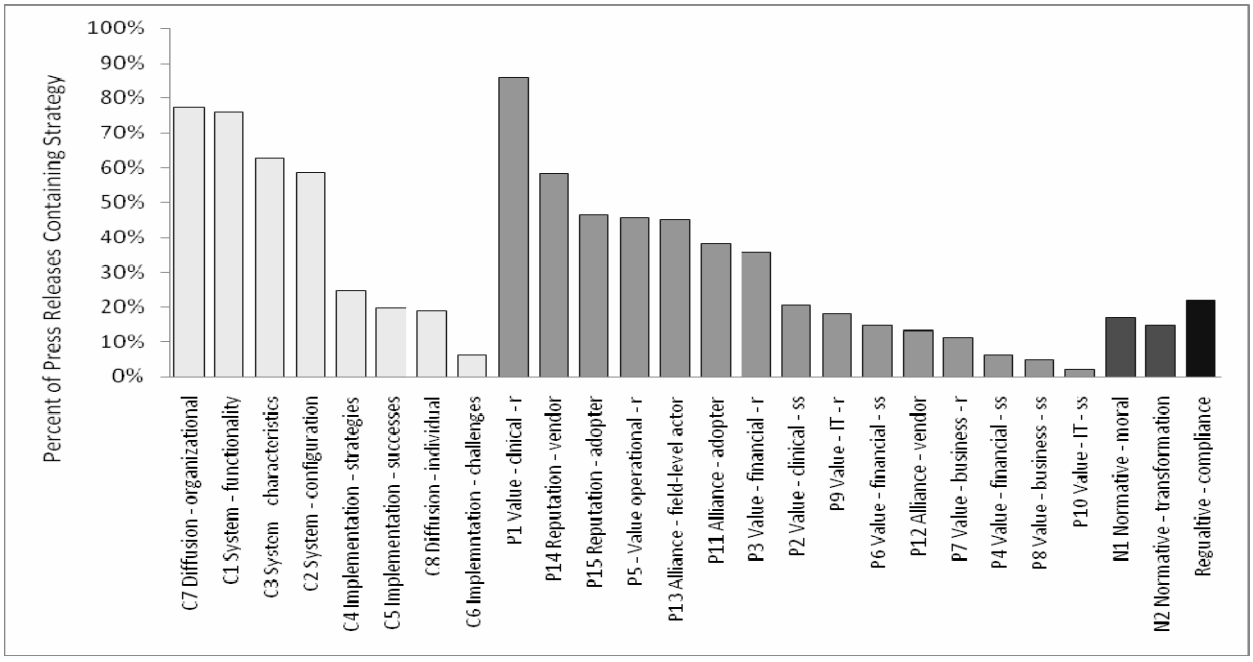

Figure 7: Use of Legitimation Strategies by CPOE Vendors

Significantly, all twenty six strategies are evident in the current data set, which suggests that the vendors employed all cultural elements from the legitimation taxonomy to construct their repertoires. Furthermore, while coding the entire corpus of press releases I did not discover any elements of the vendor discourse related to legitimation that could not be captured by codes comprising the legitimation taxonomy. Although additional verification is necessary, I interpret this as an indicator that the IT legitimation taxonomy, as a conceptual framework, achieves theoretical saturation (Glaser and Stauss 1967).

As Figure 7 shows, strategies aimed at pragmatic and cognitive forms of legitimacy were most strongly represented in the vendor discourse. In particular, the following strategies were employed by the vendors more frequently than other: P1 Value-clinical rational, C7 Diffusion-organizational, the three system-related strategies (C1, C2, and C3), and P14 Reputation-vendor. Several points follow from this observation. First, justifications of the innovation's value in its focal application domain (i.e., clinical services, in this case) and statements highlighting the spread of the innovation within its target population dominated the vendor discourse. These two categories of claims essentially reflect two major theoretical views on innovation diffusion. Specifically, P1 is directed at helping potential adopters to "objectively" assess key benefits of the innovation and, thus, lays ground for the *rational-choice* adoption decision-making. C7, on the other hand, stresses the increasing population density of the innovation and, which in turn triggers the *contagion* diffusion mechanism. This finding corroborates the argument I made in Chapter 1 that the two mechanisms, *viz.*, rational choice and contagion, play an important role in innovation diffusion; both mechanisms, however, should be viewed as socially-constructed and conditioned by discursive actions of innovation entrepreneurs and other constituent actors.

Second, system-related cognitive strategies (C1-C3) were also common in the legitimation arsenal of the CPOE vendors. These strategies as aimed primarily at enhancing comprehensibility of the innovation. So far as comprehensibility underlies interpretation, one of the three main functions of organizing visions (Swanson and Ramiller 1997), the prominence of the system-related strategies highlights the central role of interpretation in the development of organizing visions. Therefore, this observation offers support to my earlier claim that the functions of interpretation and legitimation are closely intertwined.

Finally, another pragmatic strategy – P14 Reputation-vendor – proved to be a popular choice among the CPOE vendors. As discussed earlier, P14 seeks to leverage dispositional aspects of legitimacy by trading on the entrepreneur's reputation. Reputation, however, requires an established track record and, therefore, may be difficult to claim and build upon in the early stages of innovation diffusion (Suchman 1995). Considering the low penetration rate of CPOE systems among U.S. hospitals, excessive reliance of the CPOE vendors on reputational claims seems somewhat unfounded and may be interpreted as a misplaced legitimation effort.

Along with the excessive reliance on P14, two other patterns in the overall use of legitimation strategies could provide clues as to why discursive legitimation of CPOE lacked efficacy[21]. First, as Figure 7 illustrates, value-related justifications employed by the CPOE vendors were dominated by the *rationale* strategies (P1, P3, P5, and P7), whereas the *success stories* strategies (P2, P4, P6, and P8) were vastly underrepresented[22]. Success stories, however,

[21] I argue that in the timeframe under consideration the vendors' attempts to build legitimacy for CPOE were relatively unsuccessful. Green (2004) posits that the point when an innovation becomes institutionalized (i.e., gains legitimacy) can be operationalized as the point when the level of rhetorical justifications supporting the innovation goes down while its diffusion rate stays the same of continues to increase. In the case of CPOE, over the seven year period of analysis, the volume of the legitimation discourse continued to grow while the innovation's penetration level remained low.

[22] *Rationale* strategies establish value by justifying, on the logical grounds, how the innovation can help potential adopters fill a certain performance gap. *Success stories* strategies demonstrate value by providing verifiable examples of the corresponding performance improvements.

have vital importance for building legitimacy for IT innovations (Currie 2004; Wang and Swanson 2007). Consequently, the inability of the vendors to offer real-world examples of CPOE benefits may have contributed to the relative lack of success of the vendors' legitimation efforts.

Second, claims discussing challenges and risks associated with the innovation were also quite limited in the vendors' legitimation repertoires. This, in my opinion, may have undermined *plausibility* of the vendor discourse[23] (Ramiller and Swanson 2003). For a rhetorical justification to achieve resonance among the target audience, the justification must exhibit empirical credibility. Such credibility is determined by the degree of fit between what the justification conveys and the pertinent events in the real world (Benford and Snow 2000). In case of CPOE, the empirical evidence (e.g., market surveys, reports of industry analysts, etc.) indicated a fairly low penetration rate of the innovation among healthcare care providers in the U.S., pointing to the existence of obstacles to CPOE deployment. This, nevertheless, did not receive a proper reflection in the vendor discourse, which in turn may have negatively affected the reception of the discourse by potential adopters.

Temporal Patterns in the Use of Legitimation Strategies

Figure 8 on the next page shows the overall use of legitimation strategies by year[24]. Once again, several interesting dynamics can be gleaned from the graph. Below I identify these dynamics and attempt to provide meaningful explanations grounded in the existing theoretical literature.

First, I was interested in assessing the CPOE vendors' use of legitimation strategies in the context of regularities in the temporal evolution of organizing vision discourse described

[23] As discussed earlier, plausibility refers to distortions in the organizing vision discourse as perceived by potential adopters (Ramiller and Swanson 2003).
[24] The use here is defined as a percentage of press releases containing at least one instance of a given strategy in a given year.

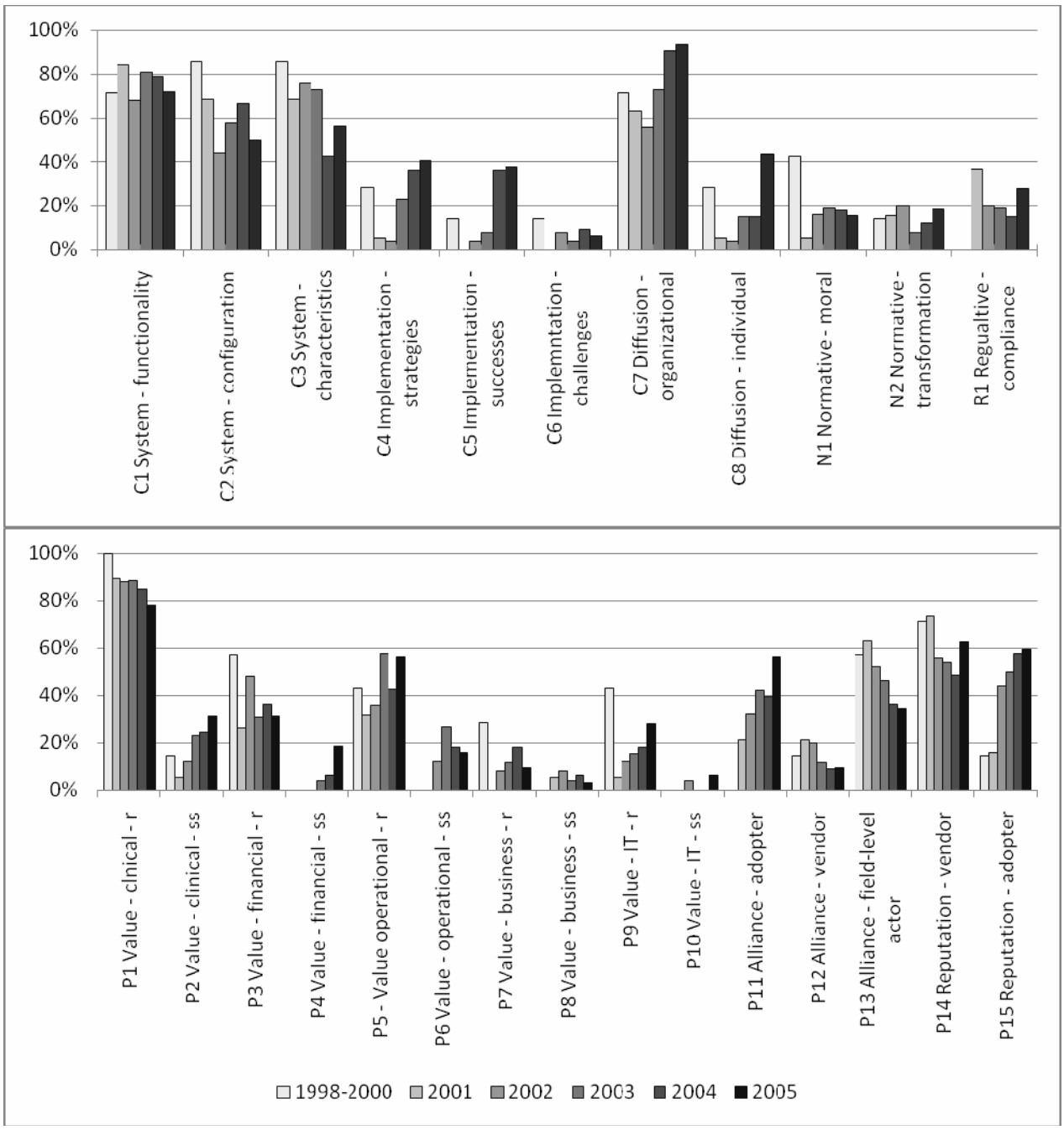

Figure 8: Use of Legitimation Strategies by Year

elsewhere in the literature. Wang and Ramiller (2004) suggest that over time organizing vision discourse progresses through a series of phases reflecting the changing knowledge needs of constituent audiences. In particular, they posit that the focus of the discourse shifts during the organizing vision lifecycle from the 'know-what' aspects of the innovation to the 'know-why'

aspects and, finally, to the 'know-how' aspects. Applying this sequence to the legitimation taxonomy, I would expect to see a gradual decrease in the use of the system-related strategies (i.e., know-what) and the value-related strategies (i.e., know-why), accompanied by an offsetting increase in the use of the implementation-related strategies (i.e., know-how).

My findings provide partial support to this conjecture. As Figure 8 indicates, the use of C2 System-configuration and C3 System-characteristics strategies did indeed taper off over time; the use of C4 Implementation-strategies and C5 Implementation-successes strategies did increase; the value-related strategies (P1-P10), however, did not exhibit any clear dynamic. The first two observations are consistent with Ping and Ramiller's (2004) argument, while the third one does not fit squarely within the proposed sequence[25]. I can only assume, perhaps, that the absence of a clear temporal pattern in the use of value-related strategies by the CPOE vendors could be an outcome of the vendors' attempts to redeploy their efforts aimed at building pragmatic legitimacy in light of the perceived lack of response from potential adopters.

Other interesting patterns that I noted included an increase in claims concerning organizational diffusion of the innovation (C7) and an increase in success stories related to clinical and financial benefits of CPOE (P2, P4). Both of these trends seem sensible and were driven, in my opinion, by the desire of the CPOE vendors to capitalize on the limited yet verifiable evidence of the CPOE spread and value.

In addition, two other patterns appear to represent vendors' attempts to adjust their legitimation repertoires in order make their claims more resonant with potential adopters. The first trend has to do with the use of the reputation-related strategies. As Figure 8 shows, over

[25] It would be naive to suggest that there exists a single pattern that underlies evolution of the organizing vision discourse of all IT innovations (Ramiller 2006). The goal, therefore, should be to uncover temporal regularities in the organizing vision discourse and attempt to explain observed patterns based on other developments in the historical development of the innovation.

time the vendors increased their reliance on P15 Reputation- adopter strategy and somewhat decreased their use of P14 Reputation-vendor strategy. One explanation behind this pattern could be that the vendors came to a realization that, in the absence of prior performance track record in the CPOE domain, claims highlighting their own reputation were not being given much credibility by the stakeholders. Reputation of their clients, on the other hand, was already established and available for the vendors to tap into. Hence, by stressing the clients' reputation and characteristics the CPOE vendors sought to achieve two objectives: (1) to trigger dispositional spillovers and (2) to reinforce diffusion through organizational imitation.

The first mechanism, as discussed earlier, is predicated on the assumption that the reputation of a client reflects positively on the reputation of a vendor, which in turn contributes to fostering dispositional legitimacy for the innovation (Suchman 1995). The second mechanism invokes trait-based imitation (Haunschild and Miner 1997). Neoinsitutional and ecological literatures suggest that actors tend to adopt new practices if these practices have been previously used by organizations with characteristics similar to those of the adopter firm, such as, for example, large size (Haunschild and Miner 1997). This is called trait-based imitation. Accordingly, much like diffusion-related strategies (C7-C8) promote adoption of the innovation based on frequency-based imitation[26], claims stressing reputation and characteristics of adopter organizations stimulate diffusion through trait-based imitation.

The second pattern concerns alliance-related strategies. These are characterized by an overall downward trend in the use of P12 Alliance-vendor and P13 Alliance-field-level actor strategies with a parallel increase in the use of P11 Alliance-adopter strategy. Alliance-related strategies are aimed at pursuing influence legitimacy, which arises when an entrepreneur co-opts constituents by incorporating their interests and goals into its own policies and standards

[26] Frequency-based imitation involves density-dependent mechanisms discussed earlier in this chapter.

(Suchman 1995). In this light, P12 is aimed at building influence legitimacy among other actors in the entrepreneurial community (e.g., other vendors), while P13 affects a wide range of actors but does so indirectly[27]. Accordingly, the aforementioned shift in strategies may be indicative of the vendors' desire to refocus their legitimation efforts on direct co-optation of potential adopters, as the most important group of the innovation stakeholders.

Cross-Actor Patterns in the Use of Legitimation Strategies

In this final step of the analysis, I focused on evaluating the use of legitimation strategies by individual vendors. IT firms vary with respect to their competencies, background, size, etc. and, therefore, it is logical to assume there will also be variations in the legitimation repertoires the firms employ. If the postulated legitimation taxonomy is to prove useful in future research, it must be capable of capturing these cross-sectional patterns. Consequently, my main objective at this point was to use the CPOE dataset to test the taxonomy's ability to identify differences and similarities between the repertoires[28].

In total, the CPOE data set contained press releases from 33 IT vendors. The distribution of press releases by vendor, however, was quite uneven. Most firms contributed only a few documents each, while a small number of vendors supplied a significant number of press releases (see Table B3 in Appendix B). I deemed it inappropriate to make judgments about a vendor's legitimation repertoire based just on a handful of texts produced by that vendor. Accordingly, I decided to include in the analysis only those vendors that contributed 7 or more press releases to the data set[29]. I identified five such vendors. Next, I employed each vendor's emphasis scores for

[27] A more detailed discussion of these strategies was presented in the previous section.
[28] Although in this study I compared legitimation repertoires of individual actors, a similar approach may be employed to compare repertoires of groups of actors. For example, one might be interested in contrasting differences in legitimation repertoires of the entrepreneurial communities promoting two different IT innovations, one that enjoyed wide acceptance and another that failed.
[29] This cut-off value was, for the most part, arbitrary. The rule I used was to include those vendors who contributed more than 5% of the documents in the entire data set.

the 26 legitimation strategies, computed earlier, to construct repertoire profile plots. These plots (see Figure 9 on the next page) show the relative emphasis that a vendor places on alternative strategies in the taxonomy. Variations across the repertoires are reflected in the different shapes of the plots. Below I provide my interpretation of the five profile plots.

In order to ease the interpretation and comparison of the profile plots, each of which comprises 26 dimensions, I organize the discussion in the following way. First, I discuss similarities in the legitimation repertoires of the five selected vendors; second, I identify differences across the repertoires. I evaluate the plots with respect to two criteria: (1) the absence or presence of a strategy in the repertoire, and (2) the emphasis on a strategy relative to all other strategies in the repertoire. My assessment of the repertoire commonalities is based primarily of the first criteria, while the evaluation of the repertoire differences encompasses both considerations.

Admittedly, my analysis is quite elementary as it is based on a simple visual assessment of the plots. The findings I report, therefore, should be viewed as tentative and aimed only at providing initial guidance for future research that will explore these matters with more rigor and detail.

Commonalities of the Repertoires: As the profile plots suggest, all five vendors chose to make use of a particular subset of legitimation strategies. Describing this subset is important insofar as it may help us eventually identify those strategies that comprise core legitimation tasks for any IT innovation. Accordingly, I report that the following strategies were common across all

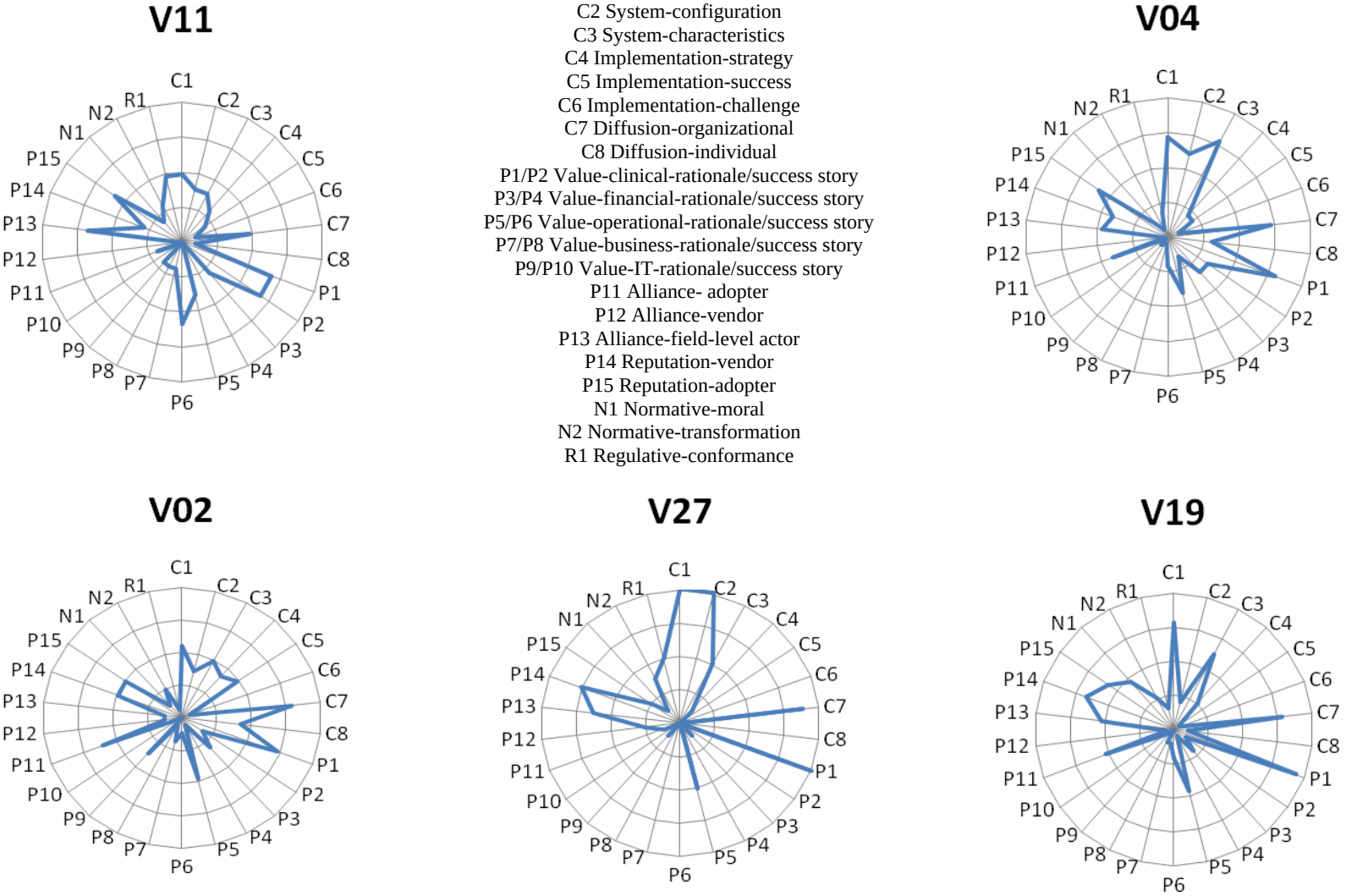

Figure 9: Legitimation Repertoires of Individual Vendors

of the five vendors' legitimation repertoires. In the cognitive cluster, system-related strategies (C1- C3) and C7 Diffusion-organizational strategy were present in all of the repertoires. Similarly, in the pragmatic cluster, all vendors stressed clinical (P1) and operational (P5) benefits of CPOE as a rationale for adoption. Also in this cluster, the use of reputation-related strategies was common across all the vendors. In particular, all vendors with exception to Vendor 27 emphasized both their own reputation as well as the reputation of their clients. Finally, all five vendors employed alliance-related pragmatic legitimation claims (P11-P13). While there were some variations with regard to the choice of specific strategies, the fact that all vendors stressed inter-actor relationships in their discourse points to the central role of alliance-related strategies in legitimation of IT innovations.

Differences in the Repertoires: In addition to the similarities outlined above, I identified a number of important differences in the legitimation repertoires among the five CPOE vendors. First, a distinguishing characteristic of Vendor 11's approach to legitimation was its reliance on the use of success stories. As the profile plot indicates, excluding P3, Vendor 11 supported all of its key value-related 'rationale' justifications (P1, P5, and P7) with success stories. Also importantly, for P1-P2, P5-P6, and P8-P9 pairs of strategies, the relative emphasis on the 'success story' strategy (e.g., P1) was comparable in magnitude to that of the corresponding 'rationale' strategy (e.g., P2). The other four vendors either did not make use of success stories at all (e.g., V27, V19), or their value-related discourse was disproportionally dominated by the 'rationale' strategies (e.g., V02, V04).

Second, the profile plot of Vendor 02 shows that implementation-related strategies comprised a significant part of this vendor's cognitive legitimation efforts. Claims concerning implementation strategies (C4) and describing implementation successes (C5) received roughly

the same emphasis in Vendor 02's discourse as claims concerning the other key strategies in its legitimation repertoire. This stands in sharp contrast to the other four vendors, whose profile plots show a characteristic gap in the C4-C5 segment of the diagram.

Third, Vendor 27's repertoire is characterized by extreme emphasis on system-related strategies, in particular on C1 and C2. While all five vendors relied heavily on this group of strategies to foster cognitive legitimacy, Vendor 27 appears to have made system-related strategies the cornerstone of its legitimation approach. In general, Vendor 27 employed relatively few strategies from the legitimation taxonomy but pursued those with great intensity. This makes its legitimation repertoire small (i.e., in terms of the number of strategies used) and highly unbalanced (i.e., high emphasis on few strategies; other strategies left unutilized). This point illustrates that repertoires can be assessed and compared not only with respect to the presence of and emphasis on particular strategies, but also in terms of the second-order properties, such as repertoire size, diversity, balance, and stability over time (Weber 2005). Such analyses may be quite useful in trying to understand the effect of repertoire characteristics on the efficacy of legitimation efforts.

Finally, legitimation repertoires of Vendor 19 and Vendor 04 do not exhibit any peculiar characteristics and appear to occupy a middle ground between the larger and more balanced repertoires of V02 and V11 on the one hand and the smaller and unbalanced repertoire of V27 on the other.

Of course, without additional information about the five vendors, such as, for instance, their profiles, market shares, history, etc., the cross-sectional analysis of legitimation repertoires presented above is not very informative. As researchers, we would like to know what actor- or innovation-level factors determine construction of legitimation repertoires; or conversely, how

repertoire content and characteristics affect legitimation, diffusion, and, at the individual level of analysis, market share. Unfortunately, the research design of this study does not afford me an opportunity to pursue these questions. Nonetheless, my findings demonstrate that the proposed IT legitimation taxonomy is capable of generating useful insights with respect to all three types of pattern analysis reported in the section. Accordingly, I posit that the taxonomy provides explanatory potential that future research can build upon to further our understanding of the role of legitimation in launching of new technologies. I also hope that some of the analytical approaches and graphical representation techniques demonstrated here will prove helpful in designing future studies aimed at advancing this research agenda.

CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

The majority of mainstream research on IT innovations relies on economic-rationalistic models and focuses on individuals and organizations as the unit of analysis. In this thesis I aimed to advance an alternative research agenda. This agenda attends to the role of institutional structures and processes that shape diffusion of IT innovations at the level of industries and organizational fields. It also seeks to understand how the spread and assimilation of complex IT innovations by organizations in a particular industry may lead to a fundamental transformation of the industry as a whole. To accomplish these objectives I carried out two research projects. Both projects drew upon and extended the framework of organizing visions for IT innovations, a framework that offers the most comprehensive neo-institutional view of innovation diffusion in the IS context. In the first project, I developed a conceptual model explicating the relationship between the process of IT innovation diffusion on the one hand and the evolution of industry belief systems on the other. In the second project, I examined the discursive strategies employed by entrepreneurs to gain and maintain legitimacy for IT innovations. The two projects are only the first step in advancing the program of research outlined above. Nevertheless, I argue that the work presented in this thesis makes a number of important contributions. In this chapter, I highlight these contributions for each of the two projects and identify future directions will help develop the two projects into comprehensive research streams. I also point out how the two projects are interrelated and how their interconnections may be leveraged in future studies. Next, I describe key limitations of the research presented in this thesis. I conclude by discussing practical implications of my work.

CONTRIBUTIONS AND FUTURE RESEARCH DIRECTIONS

Research Stream I: Organizing Visions and Industry Belief Systems

In Chapter 2, I proposed a process-oriented model of IT-industry interaction, CCMITII. The model assumes a cultural-cognitive perspective and posits a dynamic reciprocal relationship between the domain of industry and the domain of IT. Fundamentally, CMITII seeks to address the three following research questions: (1) how diffusion of complex IT innovations in organizational populations is enabled and shaped by the shared meaning structures governing the adopter (i.e., consumer) industries, (2) how over time institutional dynamics underlying the spread of IT innovations may trigger transformational changes in meaning structures situated in the consumer populations, and (3) how the development and evolution of product markets for IT innovations shape IT vendor (i.e., producer) industries. Below I discuss key contributions and future research directions for each of the three areas.

Interorganizational Diffusion of IT Innovations

CCMITII contributes to the IT innovation diffusion literature by extending the framework of organizing visions for IT innovations. At a general level, the main value of the model in this area lies in explicating the conceptual connections of the organizing vision framework to other bodies of literature, such as the literatures on institutional logics, product ontologies, and collective action frames. The ability to bring insights from these well established bodies of research to bear upon the study of organizing visions promises to strengthen the analytical potential of the framework and enrich our understanding of the neo-institutional bases of IT innovation diffusion.

More specifically, CCMITII advances the organizing vision framework by introducing the concept of the organizing vision lifecycle. This extension has a number of important

implications that open up several new research avenues. First, the concept of the organizing vision lifecycle offers a frame of reference to better understand the effect of organizing vision production and evolution on innovation diffusion. While this issue is of fundamental importance to establishing the explanatory value of the organizing vision framework, it is rarely explicitly addressed in the existing empirical literature. By drawing upon the lifecycle concept, researchers will be able to make some strides in this direction. To this end, the relationship between the progression of an organizing vision from one lifecycle stage to the next and the corresponding rate of innovation diffusion need to be explored. CCMITII provides a detailed description of key characteristics of the organizing vision discourse and structure at each stage of the lifecycle. These characteristics will enable researchers to empirically capture the evolution of organizing visions. In general, one would expect that a greater degree of social consensus in regard to the innovation's properties will produce greater innovation-diffusion power. This assumption, nonetheless, remains to be empirically tested.

Second, the proposed conceptualization of the lifecycle embeds the process of organizing vision production and evolution in the broader context of industry meaning structures. This offers researchers a lens through which to examine the effect of industry influences on the process of IT innovation diffusion. In particular, I posit that further investigation is needed into how industry beliefs situated in consumer (i.e., adopter) populations constrain and enable the development of business problematic of an organizing vision. Business problematic conveys an organizational failing to which the innovation is claimed (and perceived) to be a response. In defining such a failing, practice entrepreneurs will need to draw upon one or more of the industry recipes governing the adopter population. In this vein, I argued that industry recipes in consumer populations effectively encode business problematic of organizing visions. I also argued that

industry recipes are likely to be characterized by mutability, multiplicity, and internal contradiction (Clemens and Cook 1999). Hence, the choice of what recipe to align the vision with, or in other words how to frame the vision's business problematic, is consequential for both initial acceptance of the innovation and its long-term diffusion prospects. Investigating how different framing approaches employed by the entrepreneurs (e.g., linking the vision to a single or multiple industry recipes, identifying the most salient recipe etc.) affect the development of the organizing vision lifecycle, therefore, should be a priority for IS researchers.

Finally, considering the importance of the lifecycle concept, more research is necessary into the factors determining the progression of an organizing vision from one lifecycle stage to another. In Chapter 2, I presented some tentative ideas regarding the organizing vision lifecycle trajectories and their determinants. These ideas warrant further elaboration and testing. To this end, researchers will need to examine micro-level framing strategies whereby social actors partake in the production and maintenance of the organizing vision discourse at different stages of the lifecycle. One way to do this would be by focusing on the three discursive processes, *viz.*, articulation, alignment, and contestation[30]; an alternative approach would involve a closer examination of the three functions of organizing visions. Whichever the conceptual lens chosen, the following analytical strategy may be employed to assess the lifecycle determinants: (1) identify generic types of discursive strategies employed by actors within the organizational community; (2) measure the use of these strategies for organizing visions at different stages of the organizing vision lifecycle; (3) compare the use patterns across the visions to evaluate effect of the strategies on the unfolding of the organizing vision lifecycle. Analysis of the discursive strategies will also need to take into account the types of actors participating in the discourse. In

[30] These processes are discussed in detail on pages 42-45.

this regard, the distribution of power among members of the discourse community will play a major role in shaping the unfolding of the lifecycle.

IT-Enabled Industry Transformation

CCMITII contributes to building a research agenda for incorporating industry-level concerns into the analysis of information technology. In particular, the model will allow researchers to design studies aimed at investigating the impact of IT innovations on organizational populations and fields. In this sense, one line of research may employ the model to examine the process whereby new IT-enabled industry recipes develop and become integrated into the system of industry meaning structures. Of particular interest will be identifying the determinants of this integration. What conditions are necessary for an IT innovation to become "an everyday fact" of how organizations conduct business in a particular industry? To answer this question, researchers will need to carry out comparative case studies looking at the historical development of IT innovations that did attain the status of industry recipes and those that did not.

Another line of research may draw upon the analytical framework provided by CCMITII to better understand the details of how IT-enabled industry transformations unfold. To this end, researchers will need to examine specific changes triggered by the innovation at different levels of the adopter industry belief hierarchy. In Chapter 2, I argued that for some innovations these changes may be confined to the industry recipe level, while for others they may also involve shifts in boundary beliefs and reputational rankings. What determines the magnitude of the transformation and whether there exists a typical pattern of how these changes unfold remain to be explored. By the same token, CCMITII offers an opportunity to study the evolution and structuring of producer, or IT vendor, industries. The emergence of IT product ontologies brings about new market identities, which in turn may entail shifts in boundary beliefs, industry recipes,

and reputational ranking of the producer population. Hence, research questions concerning the determinants, magnitude, and typical patterns of transformation may also be explored in the context of vendor industries. Whether researchers choose to focus on adopters or vendors, CCMITII provides a sound conceptual foundation and delineates concrete research directions for furthering the cultural-cognitive perspective on the relationship between information technology and industry.

IT Product Ontologies and Markets

The final contribution of CCMITII lies in charting a new, potentially promising, direction in IS research. The concept of IT product ontologies proposed within the model calls for investigations into how new categories of products and services emerge and evolve in IT markets. Management literature has shown that product ontologies perform important organizing and sense-making functions in the producer and consumer populations (Porac et al. 2002; Rosa et al. 1999). Product ontologies assume even greater importance in markets involving highly complex products (Rosa and Porac 2002). Business application software and many other IT innovations undoubtedly offer such complexity. Nonetheless, I am not aware of any research looking at how ontological convergence of IT products occurs and how cognitive boundaries between various classes of information systems (e.g., business intelligence software vs. knowledge management applications vs. business analytics) are being defined and redefined in the consumer-producer interaction. I hope that CCMITII will be the start of such research.

The focus on market classifications suggested by CCMITII highlights another phenomenon deserving of research attention. This phenomenon concerns the role industry analysts, such as the Gartner Group, in shaping the evolution of IT markets. By supplying interested parties with regularly updated information about key market developments and trends,

these field-level actors create what Anand and Peterson (2000) referred to as a *market information regime*. Such regime effectively provides a "medium through which producers observe each other and market participants *[including consumers]* make sense of their world" (Anand and Peterson 2000, p. 272). According to this perspective, it is the industry analysts who often initiate emergence of IT product ontologies by defining a new class of IT and describing its key characteristics (see Wang and Swanson's 2007 study of PSA for example). Furthermore, industry analysts furnish explicit evaluations of vendor performance in each product category (e.g., Gartner's Magic Quadrants). These evaluations provide a basis for the development of reputational rankings and, thus, shape competition within a particular market segment. Despite a central role that industry analysts and the market information regimes they create play in the evolution of IT markets, studies on this topic are virtually nonexistent in the IS literature. Once again, I hope that CCMITII will give impetus for this line of research.

Research Stream II: Organizing Visions and Legitimacy

In Chapters 3 and 4, I examined the legitimation function of organizing visions. Legitimation, along with the other two functions, *viz.*, interpretation and mobilization, constitute the key mechanism by which organizing visions shape the spread of new information technologies among organizations. Accordingly, understanding the interworkings of the three functions is essential to advancing the neo-institutional perspective in IT innovation research. In this thesis, I argued that legitimation in many respects preempts the other two functions of organizing visions and, therefore, needs to be examined first.

In Chapter 3, I drew upon the broader literature on legitimacy from sociology and organization theory to develop a comprehensive view of sources of legitimacy in the context of IT innovations. I identified four forms of legitimacy that IT innovations may strive to acquire

and delineated specific legitimation strategies associated with each of these forms. I posited that IT entrepreneurs would actively engage in these strategic uses of rhetoric in order to gain legitimacy for the innovations they seek to promulgate. Further, in Chapter 4, I conducted a historical case study aimed to refine findings of the literature analysis, construct a complete taxonomy of legitimation strategies for IT innovations, and assess the exploratory power of the proposed taxonomy in an empirical setting. Below I discuss key contributions of this portion of my research and suggest directions for future studies.

The main objective of this research was the elaboration of the Swanson and Ramiller (1997) framework. To this end, I argued that the legitimation function of organizing visions assumes a central role in facilitating the innovation process. Interpretation, in this view, can be captured in the notion of cognitive legitimation, while mobilization arises as an outcome of legitimation efforts directed at members of the entrepreneurial community (e.g., other vendors, consultants, etc.). At a theoretical level, this represents a departure from the prior view where the three key functions of organizing visions were undifferentiated in terms of importance and influence. The updated conceptualization, I posit, achieves greater conceptual parsimony and is better aligned with the related literatures in sociology and organization theory.

Further, I sought to extend the framework by grounding the ideas related to legitimacy of IT innovations gleaned from the organizing vision research in the broader literature on legitimacy of new organizational forms and ventures. I identified four forms of legitimacy salient in the context of IT innovations, *viz.*, cognitive (based on comprehensibility), pragmatic (based on audience self-interest), normative (based on normal appropriateness), and regulative (based on compliance with laws and regulations). Distinguishing among these forms is important because it underscores that legitimation is not a monolithic process. Different types of

innovations and/or different stakeholder groups may be better served by strategies geared toward different types of legitimacy. Awareness of these differences will help researchers provide more accurate explanations of why legitimation of organizing visions succeeds in one case and fails in another.

Finally, at a methodological level, this research offers a useful tool for future empirical investigations of organizing visions. In particular, the legitimation taxonomy paves way for developing a more structured approach to studying lower-level discursive dynamics underpinning the evolution of organizing visions. With further development, this approach will complement the classical ethnography-like histographic studies dominating the extant literature on organizing visions (e.g., Currie 2004; Wang and Swanson 2007) with formal analytical methodologies of the "new archival tradition" (Mohr 1998; Ventresca and Mohr 2002; Weber 2005). Furthermore, such an approach will provide researchers with a common language to articulate their ideas and findings regarding organizing visions of different IT innovations. This, in turn, will enable better cross-validation between studies and contribute to building a cumulative body of knowledge on the subject.

Future research in this area may proceed in several directions. First, additional studies are necessary to establish validity of the legitimation taxonomy across a range of IT innovations. To this end, the taxonomy will need to be applied as a research lens to content-analyze discourse concerning different types of IT innovations in a variety of application domains. The goal of these studies will be to verify that the taxonomy can capture a full range of relevant discursive dynamics present in the data and detect differences in these dynamics across visions.

Second, to justify theoretical and practical importance of this line of research, future studies will also need to investigate the impact of legitimation on innovation diffusion. This

objective is best achieved through comparative case studies of IT innovations that have developed different diffusion paths within the same or similar adopter populations. Analogous to the approach described in Chapter 4, such case studies will focus on analyzing temporal and cross-sectional patterns in the use of legitimation strategies. In general, the following analytical strategy may be utilized. In step 1, aggregate legitimation repertoires employed to promote each innovation are measured with respect to the legitimation taxonomy. In step 2, the repertoires are assessed on a number or criteria, such as inclusion or exclusion of individual strategies, relative emphasis on these strategies, and the repertoire second-order properties (i.e., repertoire size, diversity, and balance). Cross-sectional analyses then focus on identifying differences in repertoires across the organizing visions. Temporal analyses examine the use of legitimation strategies within each vision in the context of key events in the historical development of the innovation. In step 3, pattern matching techniques are used to understand how differences in the aggregate legitimation repertoires affect diffusion paths of IT innovations. In a more practical vein, legitimation repertoires may also be examined at the level of individual actors. In this case, vendor market shares may serve as a dependent variable to measure efficacy of legitimation efforts.

Finally, whereas the case study presented in this thesis accounts only for one group of actors involved in the production of organizing vision discourse, namely IT vendors, future studies will need to incorporate other stakeholder groups into the analysis. These groups may include consultants, industry analysts, adopter organizations, media as well as other relevant field-level actors, such as professional organizations, regulative agencies, and advocacy groups. Some of these actors, alongside the IT vendors, will join the effort to build legitimacy for the organizing vision. Others, however, may have reasons to oppose the spread of the innovation.

These actors are likely to try to counter the legitimation justifications with claims undermining purported value of the technology. In case of CPOE, for example, a number of research studies carried out by physicians questioned a fundamental premise of the CPOE legitimation effort – that CPOE systems reduce the risk of medication errors. In order to capture these *contestation* dynamics[31], the legitimation taxonomy presented in this thesis will need to be extended. Nonetheless, taking contestation into account is important as such an approach paints a more complete picture of the production of organizing vision discourse and allows for a more accurate identification of the determinants of legitimation efficacy.

Connections between Research Stream I and Research Stream II

The two research streams outlined above also have several points of interconnection. Exploring these points, both conceptually and empirically, is important as the integration of the two streams is likely to generate additional insights into each individual area as well as to contribute to the neo-institutional view of innovation diffusion as a whole. In this section, I consider two particular points of interconnection, discuss their significance and suggest how these points may be leveraged in future research.

In Chapter 3, I noted that legitimacy of a social object is accomplished by linking of the object to an institutional framework of beliefs, values, and norms governing a particular group of social actors. Hence, to be able to better understand legitimation dynamics underpinning innovation diffusion, researchers need to attend to the institutional structures that anchor key legitimation claims. To this end, the hierarchy of industry beliefs situated in the adopter population, a core concept of CCMITII, provides a lens to operationalize these structures and study their role in the legitimation process. In particular, I would expect industry recipes to be instrumental in shaping pragmatic value-related legitimation strategies. In fact, my earlier

[31] Contestation discursive processes were discussed in Chapter 2 of this thesis.

argument to study the influence of consumer industry recipes on the development of business problematic of organizing visions[32] could be re-casted in the context of value-related legitimation. That is, so far as business problematic identifies an "organizational failing" to which the innovation is claimed to be a solution, and value-related legitimation strategies are aimed at theorizing organizational benefits of the innovation, it can be posited that business problematic of an organizing vision is effectively construed through the value-related legitimation claims of innovation entrepreneurs. In light of this argument, future studies in this area will need to integrate ideas from both research streams. As noted earlier, of particular interest will be investigating how multiplicity and mutability of industry recipes, as suggested by CCMITII, affect construction of the legitimation repertoires by innovation entrepreneurs. More specifically, such investigations may look into how choices made by the entrepreneurs in selecting which recipes to link their value-related justifications to determine outcomes of the legitimation effort and, ultimately, affect innovation diffusion.

Another important aspect of the interrelationship between the two streams of research concerns the notion of institutional entrepreneurship. As noted in Chapter 2, organizing visions vary with respect to the degree of congruence between the IT innovation and dominant industry beliefs and logics governing a target consumer population. Most IT innovations are generally consistent with existing industry recipes. Hence, the entrepreneurial effort to build legitimacy for such innovations is largely confined to demonstrating how the new practice fits within the prevalent institutional order (Rao 1998). Other innovations, however, may be fundamentally different from the established ways of conducting business. To the extent that these innovations challenge core understandings and practices in the adopter industry, they cannot be rendered appropriate and valid in the context the industry's dominant institutional beliefs (Lounsbury

[32] I discuss this argument on pages 44-46 and 111-112.

2003). Hence, in this case entrepreneurs will need to go well beyond the regular means of legitimation and engage in efforts aimed at actively altering the existing institutional arrangements.

In organization theory the latter scenario is often referred to as *institutional entrepreneurship* (Greenwood and Suddaby 2006; Maguire et al. 2004). The IS literature, which only recently began making inroads into this area, however, tend to blur the distinction between the two scenarios. Wang and Swanson (2007), for instance, seem to imply that all entrepreneurial efforts to launch IT innovations, regardless of whether or not they involve significant shifts in existing institutional logics, can be viewed as institutional entrepreneurship. This conceptual slippage, I believe, needs to be clarified and the two frameworks presented in this thesis, *viz.*, CCMITII and the IT legitimation taxonomy, may prove helpful in this regard. In particular, future studies may compare and contrast legitimation repertoires of IT vendors seeking to promulgate an IT innovation through *competitive* entrepreneurship and those engaging in *institutional* entrepreneurship[33]. I would expect that in the latter case, the IT legitimation taxonomy developed in this thesis will need to be extended to accommodate strategies aimed at fostering new institutional logics favoring the focal IT innovation.

RESEARCH LIMITATIONS

The research presented in this thesis has several limitations. With regard to CCMITII, it is generally difficult to claim a contribution of a conceptual model until its explanatory potential is illustrated in an empirical setting. Although I provided real-world examples and excerpts drawn from the existing literature on organizing vision to support the development of CCMITII, the

[33] Here I borrow terminology from Lawrence (1999), who defined two types of organizational strategy: (1) competitive strategy that involves strategic organizational responses to institutional pressures but does not entail attempts to alter existing institutions, and (2) institutional strategy, which comprises "patterns of action that are concerned with managing the institutional structures within which firms compete for resources" (p. 162).

model has not been directly applied to study the postulated relationships between IT innovations and industry. Accordingly, the research value and validity of CCMITII will need to be corroborated in future empirical studies. Because of the complexity and scope of the model, it could be difficult to test the entire model in a single study. Hence, future investigations may focus on a particular relationship or a subset of relationships reflected in CCMITII. In this chapter, I outlined several concrete directions that such investigations may pursue. Over time, findings from different studies will accumulate, contributing to the validation and, if necessary, elaboration of CCMITII as a whole.

Furthermore, the historical case study of CPOE systems presented in Chapter 4 also exhibits a number of limitations. The first limitation concerns assessment of inter-coder reliability. Currently, reliability is assessed only at the stage of constructing the IT legitimation taxonomy and tested on a sample of just ten primary documents. This is clearly insufficient to establish reliability of the coding instrument. Hence, future iterations of the study will need to include additional reliability checks carried out both at the stage of finalizing the legitimation taxonomy (Phase I) and at the stage of measuring the use of legitimation strategies by CPOE vendors (Phase II). In both cases, reliability tests will be based on double-coding of adequately large samples of vendor press releases.

The second limitation of the case study is related to the temporal analysis of legitimation patterns. Although I detected a number of interesting trends concerning the use of legitimation strategies by the CPOE vendors over time, my interpretation of these trends was hindered by the lack of contextual information. To make the analysis more insightful, the case study will need to be extended to include a timeline of key events underlying the historical development of the

innovation. The historical backdrop will provide a much richer context to make sense of why over time the vendors adjusted their repertoires for building legitimacy for CPOE.

Finally, the data employed in the case study is limited to discourse originated with a single group of innovation entrepreneurs – IT vendors. This represents a potential weakness of the research design as other types of social actors, such as consultants, industry analysts, conference firms etc. (see Wang and Swanson 2007), may also play an important role in shaping efforts to build legitimacy for IT innovations. To the extent that discursive legitimation strategies employed by these actors may differ from those utilized by IT vendors, exclusion of the broader entrepreneurial community from the analysis may have potentially contributed to gaps in the conceptualization of the IT legitimation taxonomy. IT vendors, however, represent the main driving force behind launching of IT innovations. In this light and because the key objective of the study was to make a first approach to examining legitimation dynamics in the context of IT innovations, I maintain that the study's exclusive focus on the vendor discourse is justified. Future investigations may incorporate other relevant groups of entrepreneurs into the analysis and, if necessary, extend the IT legitimation taxonomy.

Notwithstanding the limitations, I believe that this thesis makes a number of important contributions to both theory and practice. I have already discussed the theoretical contributions of my research; I outline its practical implications next.

IMPLICATIONS FOR PRACTICE

Research presented in this thesis has several important implications for practice. For IT vendors and other actors seeking to promulgate IT innovations it offers a better understanding of how to carry out the entrepreneurial efforts. For example, the legitimation taxonomy explicates major strategies to build legitimacy for IT innovations. In this vein, the taxonomy can guide firms in

devising communication campaigns to promote new classes of organizational IT. Similarly, the insights from cross-sectional and temporal analyses of legitimation repertoires will sensitize vendors to specific factors determining effectiveness of strategic legitimation. Finally, producers of IT innovations will benefit from the realization of the socially-constructed nature of IT markets and product categories, as illustrated by CCMITII, and the understanding of the political processes involved in their development and evolution.

For adopter firms this research offers insights that help inform adoption decision-making. In particular, both research streams address the role and nature of IT innovation discourse. While such discourse does, to some extent, provide potential adopters with early knowledge about an innovation, it also can be strategically manipulated by actors seeking to propagate the new practice. Thus, uncritical reliance on the innovation discourse often results in mindless adoption and leads to the development of IT fads and fashions (Swanson and Ramiller 2004). The detailed description of the three stages of the organizing vision lifecycle provided by CCMITII enables potential adopters to gauge maturity of IT innovations. This, in turn, will promote mindful adoption by helping organizations make more informed decisions of whether and when to embark on a new technology. Finally, the IT-industry interaction dynamics discussed in this thesis draw attention of consumer organizations to the possibility of IT-enabled industry transformations. Such awareness is important as it puts the firms in a position to be able to adjust to or even take advantage of the fundamental redrawing of the rules of the game that may occur within the industry.

REFERENCES

Abrahamson, E. "Managerial fads and fashions: the diffusion and refection of innovations," Academy of Management Review (16:3) 1991, p 586.

Abrahamson, E. "Management fashion," *Academy of Management Review* (21:1), 1996, p. 254.

Abrahamson, E., and Fairchild, G. "Management fashion: Lifecycles, triggers, and collective learning processes," *Administrative Science Quarterly* (44:4) 1999, pp 708-740.

Agarwal, R., and Lucas, H.C. "The information systems identity crisis: Focusing on high-visibility and high-impact research," *MIS Quarterly* (29:3) 2005, pp 381-398.

Aldrich, H.E., and Fiol, C.M. "Fools rush in – The institutional context of industry creation," *Academy of Management Review* (19:4) 1994, pp 645-670.

Anand, N., and Peterson, R.A. "When market information constitutes fields: Sensemaking of markets in the commercial music industry," *Organization Science* (11:3) 2000, pp 270-284.

Anton, J. "The past, present and future of customer access centers," *International Journal of Service Industry Management* (11:2) 2000, pp 120-130.

Ashforth, B.E., and Gibbs, B.W. "The double-edge of organizational legitimation," *Organization Science* (1) 1990, pp 177-194.

Attewell, P. "Technology diffusion and organizational learning: The case of business computing," *Organization Science* (3:1) 1992, p 1.

Avgerou, C., and Madon, S. "Framing IS studies: Understanding the social context of IS innovation," in: *The Social Study of Information and Communication Technology*, C. Avgerou, C. Ciborra and F. Land (eds.), Oxford University Press, Oxford, 2004, pp. 162-182.

Benford, R.D., and Snow, D.A. "Framing processes and social movements: An overview and assessment," *Annual Review of Sociology* (26:1) 2000, pp 611-639.

Burt, R.S. "Social contagion and innovation – Cohesion versus structural equivalence," *American Journal of Sociology* (92:6) 1987, pp 1287-1335.

Chatterjee, D., Grewal, R., and Sambamurthy, V. "Shaping up for e-commerce: Institutional enablers of the organizational assimilation of web technologies," *MIS Quarterly* (26:2) 2002, pp 65-89.

Chiasson, M.W., and Davidson, E. "Taking industry seriously in information systems research," *MIS Quarterly* (29:4) 2005, pp 591-605.

Clemens, E.S., and Cook, J.M. "Politics and institutionalism: Explaining durability and change," *Annual Review of Sociology* (25:1) 1999, pp 441-467.

Collier, G. "E-learning application infrastructure," in: *White Paper*, Sun Microsystems, Palo Alto, CA, 2002.

Crowston, K., and Myers, M.D. "Information technology and the transformation of industries: Three research perspectives," *Journal of Strategic Information Systems* (13:1) 2004, pp 5-28.

Currie, W.L. "The organizing vision of application service provision: A process-oriented analysis," *Information & Organization* (14) 2004, pp 237-267.

Currie, W.L., and Parikh, M.A. "A Critical analysis of is innovations using institutional theory," in: *Gordon B. Davis Symposium: The Future of the Information Systems Academic Discipline*, Minneapolis, MN, 2005.

Damsgaard, J., and Lyytinen, K. "The role of intermediating institutions in the diffusion of electronic data interchange (EDI): How industry associations intervened in Denmark, Finland, and Hong Kong," *Information Society* (17:3) 2001, pp 195-210.

Davenport, T.H. "Putting the enterprise into the enterprise system," *Harvard Business Review* (76:4) 1998, pp 121-131.

Davidson, E., and Reardon, J.L. "Organizing vision for it healthcare: Analysis of the discourse surrounding electronic health records," Academy of Management Annual Meeting, Honolulu, Hawaii, 2005.

Davis, J.A. "Clustering and structural balance in graphs," *Human Relations* (20) 1967, pp 130-137.

DiMaggio, P.J., and Powell, W.W. "The iron cage revisited - Institutional isomorphism and collective rationality in organizational fields," *American Sociological Review* (48:2) 1983, pp 147-160.

Fichman, R.G. "The Diffusion and assimilation of information technology innovations," in: *Framing the Domains of IT Management: Projecting Future... Through the Past*, R.W. Zmud (ed.), Pinnaflex Educational Resources, Inc., Cincinnati, OH, 2000, pp. 105-128.

Fichman, R.G. "Going beyond the dominant paradigm for information technology innovation research: Emerging concepts and methods," *Journal of the Association for Information Systems* (5:8) 2004, pp 314-355.

Firth, D.R. "The organizing vision for customer relationship management," Americas Conference on Information Systems, Boston, MA, 2001, pp. 834-840.

Friedland, R., and Alford, R. "Bringing society back in: Symbols, practices, and institutional contradictions," in: *The New Institutionalism in Organizational Analysis*, W.W. Powell and P. DiMaggio (eds.), University of Chicago Press, Chicago, IL, 1991, pp. 232-263.

Geroski, P.A. "Models of technology diffusion," *Research Policy* (29:4/5) 2000, pp 603-625.

Glaser, B.G., and Stauss, A.L. *The discovery of grounded theory*, Aldine, Chicago, 1967.

Goffman, E. *Frame Analysis: An essay on the organization of the experience*, Harper Colophon, New York, 1974.

Granovetter, M.S. "Strength of weak ties," *American Journal of Sociology* (78:6) 1973, pp 1360-1380.

Green, S.E. "A Rhetorical theory of diffusion," *Academy of Management Review* (29:4) 2004, pp 653-669.

Greenwood, R., and Suddaby, R. "Institutional entrepreneurship in mature fields: The big five accounting firms," *Academy of Management Journal* (49:1), Feb 2006, pp 27-48.

Greenwood, R., Suddaby, R., and Hinings, C.R. "Theorizing change: The role of professional associations in the transformation of institutionalized fields," *Academy of Management Journal* (45:1) 2002, pp 58-80.

Griffith, T.L. "Technology features as triggers for sensemaking," *Academy of Management Review* (24:3) 1999, p 472.

Hannan, M.T., and Freeman, J.H. "The population ecology of organizations," *American Journal of Sociology* (82) 1977, pp 29-64.

Hannan, M.T., and Freeman, J.H. *Organizational ecology*, Harvard University Press, Cambridge, MA, 1989.

Hargadon, A.B., and Douglas, Y. "When innovations meet institutions: Edison and the design of the electric light," *Administrative Science Quarterly* (46:3) 2001, pp 476-501.

Haunschild, P.R., and Miner, A.S. "Modes of interorganizational imitation: The effects of outcome salience and uncertainty," *Administrative Science Quarterly* (42:3) 1997, pp 472-500.

Hoffman, A.J. "Institutional evolution and change: Environmentalism and the U.S. chemical industry," *Academy of Management Review* (42:4) 1999, pp 351-372.

Hoffman, A.J. "Linking organizational and field-level analyses - The diffusion of corporate environmental practice," *Organization & Environment* (14:2) 2001, pp 133-156.

Hunton, J.E., McEwen, R.A., and Wier, B. "The Reaction of financial analysts to enterprise resource planning (ERP) implementation plans," *Journal of Information Systems* (16:1) 2002, p 31.

Jang, Y.S., and Luo, X.W. "Nation-state participation in intergovernment technology organizations," *International Journal of Comparative Sociology* (41:3-4) 2000, pp 255-284.

Jepperson, R.L. "Institutions, institutional effects, and institutionalism," in: *The new institutionalism in organizational analysis,* W. Powell and P.J. DiMaggio (eds.), University of Chicago Press, Chicago, 1991, pp. 143-163.

Johnson, C., Dowd, T.J., and Ridgeway, C.L. "Legitimacy as a social process," *Annual Review of Sociology* (32) 2006, pp 53-78.

Kaushal, R., Shojania, K.G., and Bates, D.W. "Effects of computerized physician order entry and clinical decision support systems on medication safety - A systematic review," *Archives of Internal Medicine* (163:12) 2003, pp 1409-1416.

Kimberly, J.R. "Managerial innovation," in: *Handbook of organizational design,* P.C. Nystrom and W.H. Starbuck (eds.), Oxford Univesity Press, New York, 1981, pp. 84-104.

King, J.L., Gurbaxani, V., Kraemer, K.L., McFarlan, F.W., Raman, K.S., and Yap, C.S. "Institutional factors in information technology innovation," *Information Systems Research* (5:2) 1994, p 139.

Klaus, H., Roseman, M., and Gable, G.G. "What is ERP?," *Information Systems Frontiers* (2:2) 2000, pp 141-161.

Koloszyc, G. "Retailers, suppliers push joint sales forecasting," *Stores Magazine* (80:6) 1998, p 28.

Koppel, R., Metlay, J.P., Cohen, A., Abaluck, B., Localio, A.R., Kimmel, S.E., and Strom, B.L. "Role of computerized physician order entry systems in facilitating medication errors," *JAMA: The Journal of The American Medical Association* (293:10) 2005, pp 1197-1203.

Kuperman, G.J., and Gibson, R.F. "Computer physician order entry: benefits, costs, and issues," *Annals of Internal Medicine* (139:1) 2003, pp 31-39.

Landis, J.R., and Koch, G.G. "Application of hierarchical kappa-type statistics in assessment of majority agreement among multiple observers," *Biometrics* (33:2) 1977, pp 363-374.

Lawrence, T.B. "Institutional strategy," *Journal of Management* (25:2) 1999, pp 161-187.

Leblebici, H., Salancik, G.R., Copay, A., and King, T. "Institutional change and the transformation of interorganizational fields - An organizational history of the united-states radio broadcasting industry," *Administrative Science Quarterly* (36:3) 1991, pp 333-363.

Lewis, I., Semeijn, J., and Talalayevsky, A. "The impact of information technology on travel agents," *Transportation Journal* (37:4) 1998, pp 20-25.

Lounsbury, M. "Institutional expertise: Sources of professional money management firm contracting in the us mutual fund industry," Annual American Sociological Association Meeting, Atlanta, 2003, pp. 1-73.

Lounsbury, M., and Rao, H. "Sources of Durability and change in market classifications: A study of the reconstitution of product categories in the American mutual fund industry, 1944-1985," *Social Forces* (82:3) 2004, pp 969-999.

Lounsbury, M., Ventresca, M., and Hirsch, P.M. "Social movements, field frames and industry emergence: A cultural-political perspective on US recycling," *Socio-Economic Review* (1) 2003, pp 71-104.

Lucas, H.C., Swanson, E.B., and Zmud, R.W. "Implementation, innovation, and related themes over the years in information systems research," *Journal of the Association for Information Systems* (8:4) 2007, pp 206-210.

Maguire, S., Hardy, C., and Lawrence, T.B. "Institutional entrepreneurship in emerging fields: HIV/AIDA treatment advocacy in Canada," *Academy of Management Journal* (47:5) 2004, pp 657-679.

March, J.G. "Bounded rationality, ambiguity and the engineering of choice," *Bell Journal of Economics* (9) 1978, pp 587-608.

Martin, P.Y., and Powell, R.M. "Accounting for the 2nd assault - Legal organizations framing of rape victims," *Law and Social Inquiry-Journal of the American Bar Foundation* (19:4) 1994, pp 853-890.

Meyer, J.W., and Rowan, B. "Institutionalized organizations - Formal-structure as myth and ceremony," *American Journal of Sociology* (83:2) 1977, pp 340-363.

Mohr, J.W. "Measuring meaning structures," *Annual Review of Sociology* (24) 1998, pp 345-370.

Munir, K.A., and Phillips, N. "The birth of the 'Kodak moment': Institutional entrepreneurship and the adoption of new technologies," *Organization Studies* (26:11) 2005, pp 1665-1687.

Orlikowski, W.J., and Barley, S.R. "Technology and institutions: What can research on information technology and research on organizations learn from each other?" *MIS Quarterly* (25:2) 2001, pp 145-165.

Pfeffer, J. "Management as symbolic action: The creation and maintenance of organizational paradigms.," in: *Research in organizational Behavior*, L.L. Cummings and B.M. Straw (eds.), JAI Press, Greenwich, CT, 1981, pp. 1-52.

Phillips, N., Lawrence, T.B., and Hardy, C. "Discourse and institutions," *Academy of Management Review* (29:4) 2004, pp 635-652.

Piccoli, G., and Ives, B. "IT-Dependent strategic initiatives and sustained competitive advantage: A review and synthesis of the literature," *MIS Quarterly* (29:4) 2005, pp 747-776.

Porac, J.F., Ventresca, M.J., and Mishina, Y. "Interorganizational cognition and interpretation," in: *The Blackwell companion to organizations*, J.A.C. Baum (ed.), Blackwell Publishers, Malden, MA, 2002, pp. 579-598.

Porter, M.E., and Millar, V.E. "How information gives you competitive advantage," *Harvard Business Review* (63:4) 1985, pp 149-161.

Powell, W.W., and DiMaggio, P.J. *The institutionalism in organizational analysis*, The University of Chicago Press, Chicago and London, 1991.

Prescott, M.B., and Conger, S.A. "Information technology innovations - A classification by it locus of impact and research approach," *Data Base for Advances in Information Systems* (26:2-3) 1995, pp 20-41.

Ramiller, N.C. "Hype! Toward a theory of exaggeration in information technology innovation," *Academy of Management Annual Meeting*, Atlanta, GA, 2006.

Ramiller, N.C., and Swanson, E.B. "Organizing visions for information technology and the information systems executive response," *Journal of Management Information Systems* (20:1) 2003, p 13.

Rao, H. "Caveat emptor: The construction of nonprofit consumer watchdog organizations," *American Journal of Sociology* (103:4) 1998, pp 912-961.

Robey, D., and Boudreau, M.C. "Accounting for the contradictory organizational consequences of information technology: Theoretical directions and methodological implications," in: *Information Systems Research*, INFORMS: Institute for Operations Research, 1999, p. 167.

Rogers, E.M. *Diffusion of Innovations*, (4th ed.) Free Press, New York, 1995.

Rosa, J.A., Judson, K.M., and Porac, J. "On the sociocognitive dynamics between categories and product models in mature markets," *Journal of Business Research* (58:1) 2005, pp 62-69.

Rosa, J.A., and Porac, J.F. "Categorization bases and their influence on product category knowledge structures," *Psychology & Marketing* (19:6) 2002, pp 503-531.

Rosa, J.A., Porac, J.F., Runser-Spanjol, J., and Saxon, M.S. "Sociocognitive dynamics in a product market," *Journal of Marketing* (63: Special Issue) 1999, pp 64-77.

Ross, J.W., and Westerman, G. "Preparing for utility computing: The role of IT architecture and relationship management," *IBM Systems Journals* (43:1) 2004, pp 5-19.

Scheufele, D.A. "Framing as a theory of media effects," *Journal of Communication* (49:1) 1999, pp 103-122.

Schilling, M.A. "Toward a general modular systems theory and its application to interfirm product modularity," *Academy of Management Review* (25:2) 2000, pp 312-335.

Scott, W.R. *Institutional change and healthcare organizations: From professional dominance to managed care* University of Chicago Press, Chicago, 2000.

Scott, W.R. *Institutions and organizations* Sage Publications, Thousand Oaks, 2001.

Strang, D., and Macy, M.W. "In Search of excellence: Fads, success stories, and adaptive emulation," *American Journal of Sociology* (107:1) 2001, pp 147-182.

Strang, D., and Meyer, J.W. "Institutional conditions for diffusion," *theory & society* (22:4) 1993, pp 487-512.

Strang, D., and Soule, S.A. "Diffusion in organizations and social movements: From Hybrid Corn to Poison Pills.," *Annual Review of Sociology* (24:1) 1998, p 265.

Strobbe, I., and Jacobs, G. "E-releases: A view from linguistic pragmatics," *Public Relations Review* (31:2), Jun 2005, pp 289-291.

Stryker, R. "Rules, resources, and legitimacy processes - Some implications for social-conflict, order, and change," *American Journal of Sociology* (99:4) 1994, pp 847-910.

Stuart, T.E. "network positions and propensities to collaborate: An investigation of strategic alliance formation in a high-technology industry," *Administrative Science Quarterly* (43:3) 1998, pp 668-699.

Suchman, M.C. "Managing legitimacy: Strategic and institutional approaches," *Academy of Management Review* (20:3) 1995, pp 571-610.

Suddaby, R., and Greenwood, R. "Rhetorical strategies of legitimacy," *Administrative Science Quarterly* (50:1) 2005, pp 35-67.

Swanson, B.E., and Ramiller, N.C. "Innovating mindfully with information technology," *MIS Quarterly* (28:4) 2004, pp 553-583.

Swanson, B.E., and Wang, P. "Knowing why and how to innovate with packaged business software," *Journal of Information Technology* (20:1) 2005, p 20.

Swanson, E.B. "Information-systems innovation among organizations," *Management Science* (40:9) 1994, pp 1069-1092.

Swanson, E.B., and Ramiller, N.C. "The organizing vision in information systems innovation," *Organization Science* (8:5) 1997, pp 458-474.

Teo, H.H., Wei, K.K., and Benbasat, I. "Predicting intention to adopt interorganizational linkages: an institutional perspective.," *MIS Quarterly* (27:1) 2003, p 19.

Thornton, P.H., and Ocasio, W. "Institutional logics and the historical contingency of power in organizations: Executive succession in the higher education publishing industry, 1958-1990," *American Journal of Sociology* (105:3) 1999, pp 801-843.

Tingling, P., and Parent, M. "An exploration of enterprise technology selection and evaluation," *Journal of Strategic Information Systems* (13:4), Dec 2004, pp 329-354.

Tolbert, P.S., and Zucker, L.G. "Institutional sources of change in the formal-structure of organizations - The diffusion of civil-service reform, 1880-1935," *Administrative Science Quarterly* (28:1) 1983, pp 22-39.

Tolbert, P.S., and Zucker, L.G. "Institutionalization of institutional theory," in: *The Handbook of Organization Studies*, S.R. Clegg, C. Hardy and W. Nord (eds.), Sage, Thousand Oaks, CA, 1996, pp. 175-190.

Tushman, M.L., and Anderson, P. "Technological discontinuities and organizational environments," *Administrative Science Quarterly* (31:3) 1986, pp 439-466.

Van de Ven, A.H., Polley, D., Garud, R., and Venkataraman, S. *The innovation journey* Oxford University Press, Oxford, England, 1999.

Ventresca, M., and Mohr, J.W. "Archival research methods," in: *The Blackwell Companion to Organizations*, J.A.C. Baum (ed.), Blackwell Publishers Ltd., Oxford, 2002, pp. 805-828.

Wang, P. "Fashion in information technology," *Unpublished Doctoral Dissertation*, University of California Los Angeles, 2005.

Wang, P., and Ramiller, N.C. "Community learning in information technology fashion," International Conference on Information Systems, Washington, DC, 2004, pp. 39-52.

Wang, P., and Swanson, B.E. "Launching professional services automation: Institutional entrepreneurship for information technology innovations," *Information & Organization* (17) 2007, pp 59-88.

Weber, K. "A toolkit for analyzing corporate cultural toolkits," *Poetics* (33:3-4) 2005, pp 227-252.

Yin, R.K. *Case study research, design and methods*, (3rd ed.) Sage Publications, Newbury Park, 2002.

Zbaracki, M.J. "The rhetoric and reality of total quality management," *Administrative Science Quarterly* (43:3) 1998, pp 602-636.

Zucker, L.G. "The role of institutionalization in cultural persistence," *American Sociological Review* (42) 1977, pp 726-743.

Zucker, L.G. "Organizations as institutions," in: *Research in the Sociology of Organizations*, B.S. B. (ed.), JAI Press, Greenwich, CT, 1983, pp. 1-42.

Zucker, L.G. "Combining institutional theory and population ecology: No legitimacy, no history," *American Sociological Review* (54) 1989, pp 542-545.

APPENDIX A: CULTURAL-COGNITIVE MODEL OF IT-INDUSTRY INTERACTION (CMITII)

Table A1: CCMITII - Stages of the Organizing Vision Career

	Stage I	Stage II	Stage III
OV Structure	Theorization Frame (could be multiple)	IT Product Ontology	IT-Enabled Industry Recipe
Properties of OV structure	• A discursive frame put forth by practice entrepreneurs in order to disseminate organizing ideas about the focal innovation aimed at helping social actors across the organizational field to perceive, interpret, and act upon the innovation in ways that facilitate its acceptance and spread. • Performs two tasks: • Theorization of the diffusing practice – identifies an organizational problem(s) and presents the innovation as a means to resolve it • Theorization of the adopting population - identifies organizational population(s) whose members face the aforementioned problem; this becomes the target population(s) for the innovation	• A fundamentally shared meaning structure comprising basic definitions, major attributes, usage conditions, as well as characteristics of the underlying IT artifact for a particular type of IT systems • Emerges as an outcome of negotiation among actors in the producer and consumer populations • Ontological convergence has to occur: o In traditional consumer products – around a core set of product attributes/features o In complex IT innovations – around a stable business problematic	• Taken-for-granted industry logics for action that are intrinsically interwoven and dependent on the focal IT innovation • As a cultural-cognitive institution, IT-enabled industry recipes do not require repeated collective mobilization • Becomes a "cost of doing business" for organizations in consumer industries
Properties of OV discourse	• Source – members of the producer population, analysts, consultants, industry media • Focus – know-what, know-why • Volume – gradually increasing • Discursive dynamics o Articulation o Alignment o Contestation ▪ By vision opponents ▪ By industry media ▪ Disputes with the community of practice entrepreneurs	• Source – actors from producer and consumer population (the voice of consumers becomes much more pronounced - this is a necessary condition to ascertain the shared nature of product ontologies), industry media • Focus – know-why, know-how (know-what fades away) • Volume – significantly increasing • Discursive dynamics - Contestation o By social actors in the consumer population o By vision opponents o By industry media • Disputes with the community of entrepreneurs	• Sources – actors from producer population, industry media • Focus – know-how • Volume – decreasing • Contestation –minor

Impact of industry on IT	• Dominated by the influence of industry recipes in the consumer population of the development of an OV • Practice entrepreneurs will seek to align the theorization frame with industry beliefs situated in the target consumer population • Actors within the consumer population will evaluate the theorization frame in the backdrop of industry beliefs salient to them • Thus, industry beliefs situated in a consumer population effectively encode business problematic of an OV	• Industry recipes encode metrics used to by actors in the consumer population to evaluate: • Theorization frame – by those organizations that have not yet adopted the innovation • Efficacy of the focal innovation in meeting the expectations fostered by the original theorization - by those organizations that have gained first-hand experience with the innovation	None
Impact of IT on industry	• Consumer population o Non-significant • Producer population o Some recalibrating in the existing product ontologies and boundary beliefs may start to take place	• Producer population o Provides a foundation for the development of a new producer market identity (i.e., boundary beliefs) o Lays foundation for the development of industry recipes and reputational rankings • Consumer population o Has no significant effect on industry meaning structures – is not a part of the industry belief hierarchy o Aids consumers to navigate IT product markets	• Producer population o Provides basis for fairly stable producer market identities • Consumer population o Constitutes industry recipes o Provides a foundation for shifts in reputational rankings o May trigger changes across all levels of the industry belief hierarchy
Possible career trajectories	• Develops into Stage II • Dissipates	• May stay in Stage II for an extended period of time • Develops into Stage III • Regresses into stage I (through splitting, branching, or absorption) • Becomes abandoned	• Remains stable for prolonged periods of time • May eventually be replaced by another OV
Example (at the time of studies)	Professional Services Automation software (Wang and Swanson 2003)	Application Service Provisioning (Currie 2004)	Enterprise Resource Planning (Wang and Ramiller 2004)

APPENDIX B: IT LEGITIMATION TAXONOMY

Table B1: Legitimation Strategies - Examples

Strategies – Cognitive Legitimacy	
C1	**System – functionality:** Explicitly define key features, attributes, and usage conditions of the innovation Examples: • Nurses at *(hospital X)* use the technology to close the loop on medication safety by scanning the drug and the patient's armband at the bedside - with patient and drug information automatically checked and confirmed by the IDX enterprise clinical system. • *(Software X)* includes specific content tailored to the pediatric patient care setting, providing the care giver with pediatric-specific alerts, charts, calculations and medication dosing information where the clinician needs it most-at the point of care. • *(Software X)* enables user provisioning, enterprise single sign-on, strong authentication including password, biometrics and proximity technologies, context management and privacy auditing across any clinical and non-clinical applications. • *(Vendor X's)* Closed Loop Medication Process solution, the first and only solution in the industry to connect the ordering, dispensing and administering of medications across the care continuum, is also being expanded. More than just CPOE, this closed-loop system synchronizes physician orders, pharmacy fulfillment and nurse administration. • With this functionality in place, our clinicians will use *(software X's)* advanced decision support at every step of the medication cycle -- starting when the order is entered via CPOE, continuing through dispensing at the pharmacy, and concluding when the medication is administered at the patient's bedside.
C2	**System – configuration:** Explicitly define key characteristics of the underlying IT artifact The vendor press releases did not contain descriptions of general characteristics of the underlying CPOE system IT artifact, but rather included descriptions of configurations and architectures specific to that vendor's system, such as those below. Examples: • The *(software X)* architecture shares information through a unified clinical data repository, allowing *(hospital X)* to deploy an integrated web-service IT system… • Both *(software X)* and *(software Y)* are built on the HP NonStop(TM) platform, known for its ability to deliver 99.9 percent uptime and to process large numbers of simultaneous transactions with subsecond speed -- a crucial characteristic when an IT system supports direct patient care. • With a clinical data repository at its core, (product x's) contemporary open architecture design combined with a built-in EMPI and integration engine enables full interoperability among disparate systems. • …the alliance will deliver enhanced value to *(vendor X's)* customers by embedding Microsoft's .NET Framework, smart client technology and Web services into *(system X)*, thus providing users with richer, connected and more productive experiences across desktop and mobile devices.

C3	**System – characteristics:** Describe general characteristics of the innovation; align these characteristics with the current technological best practices Similar to legitimacy strategy C2 above, vendor press releases rarely described system characteristics specific to CPOE other than 'integration' (software/hardware architectures, data, etc.). High reliability, responsiveness, ease of use and security were, however, frequently mentioned as critical elements for successful CPOE systems, accompanied by claims related to specific vendor products. Examples: • This robust version of *(system X)* is another testament to the substantial scalability of the broad range of solutions across all types of health systems. • With its combination of scalability, reliability and a guarantee of 99.9 percent uptime, *(system X)* is uniquely positioned to meet the demands of the 21st century healthcare organization. • *(System X)* is easy to use and is extremely flexible, allowing a physician to perform their normal ordering tasks efficiently. • Bar code charting is a natural extension of CPOE, and with an integrated system in place the information can flow seamlessly from module to module, without the need for complex interfaces.
C4	**Implementation – strategies:** Describe implementation strategies/success factors Examples: • The implementation process included intensive training for all user groups, including more than 700 (hospital X) employees, 150 physicians and their office staffs. *(Vendor Y's)* experience in educating clinical teams and providing customized training tools and a variety of training modalities helped ensure organizational adoption of new applications. • To facilitate the CPOE rollout and drive physician adoption, *(Dr. X)* developed an e-mail feedback system to help IT staff work more closely with clinicians to design order sets that match physician ordering patterns and report back on how they worked. He also launched a unique IT department rotation for residents. So far, 10 residents have completed one-month tours of service within the system's IT department. • Hospital officials noted that the close collaboration of physicians, nursing staff and ancillary departments during the design, development and testing process was one of the key success factors for rapid and smooth adoption of CPOE.
C5	**Implementation – successes:** Demonstrate implementation successes (examples) Examples: • *(System X)* was deployed quickly throughout our facility, and we look forward to continuing our roll- out to all clinical providers in the coming months. • "*(Vendor X)* not only completed the first phase of this project on time but also under budget. Additionally, the knowledge transfer of the system maintenance allowed us to focus on our business, not the implementation of technology," he said. • Using *(system X), (hospital Y)* successfully launched and established computerized physician order entry (CPOE) with 90 percent of patient care units now live on electronic ordering, including the critical care environment. • Thanks to the dedication of our MIS and facility staff, as well as the collaboration of our clinical team, we have completed three successful activations and look forward to continued

	momentum as we complete our remaining activations.
C6	**Implementation – challenges:** Discuss challenges/risks associated with the innovation Examples: • For small and mid-sized hospitals (below 500 beds) however, the technology investment required for CPOE and a comprehensive CIS system can be challenging, both financially and logistically. • Nationally, only about 5 percent of hospitals have functioning CPOE systems. Of these, fewer than 20 percent enter more than half of orders electronically. • We quickly realized that traditional solutions in the market were financially out of our reach.
C7	**Diffusion – organizational:** Describe positive market response to the innovation; emphasize ongoing development of the innovation Examples: • *(Vendor x)* today announced an agreement with Vancouver Coastal Health Authority (VCHA) in Vancouver, B.C. to provide *(product x)* enterprise clinical system across the largest health organization in Canada. VCHA, serving 25 percent of British Columbia's residents, selected *(product x)* to leverage the system's expanded computerized physician order entry (CPOE) and electronic clinical documentation capabilities. • Based on the survey responses, KLAS estimates that slightly more than one third of hospitals using CPOE to any extent are "aggressive" users - that is, entering more than 50 percent of orders online. That translates to only 0.8 to 1.3 percent of the nation's hospitals that are aggressively using CPOE, and puts *(hospital x)* at the top of an elite group. • *(Vendor X)* (Nasdaq: *XXXX*) announced today that Cerner Millennium(TM) release 2003 will be available March 2003. • As electronic health records (EHR), computerized physician order entry (CPOE) systems, public clinical trials databases and other cutting edge technologies become standard tools, the spotlight on healthcare IT has never been brighter.
C8	**Diffusion – end user:** Stress acceptance of the innovation by end users Examples: • "Physician acceptance of the CPOE software at *(hospital X)* has been very high, and entering orders has become second nature," said Dr. *(Y)*, associate chairman of the department of emergency medicine at *(Z)* County • As a result of this expansion, approximately 600 physicians will be able to submit medication orders to *(hospital X)* online from the clinic setting. • At *(hospital X)*, more than 2,600 users have accessed the *(system Y)* since its initial activation in 2004 for full computerized provider order entry (CPOE) and results reporting for Lab, Radiology and Nutritional Services, with more than 2.2 million orders placed. • The hospital has *(system X's)* leading-edge computerized physician order entry (CPOE) and results reporting capabilities since 1999 and has an impressive 98 percent physician adoption rate.

Strategies – Pragmatic Legitimacy	
P1	**Value – clinical – rational:** Explain how the innovation improves quality of medical care in an adopter organization Examples: • The nursing staff is looking forward to even greater patient safety outcomes with advanced care plans and additional new functionality in *(system X)*. • "Our No. 1 priority is to deliver the highest-quality care to the communities we serve, and that means providing clinicians with tools to make the best possible treatment decisions and to easily communicate with patients and others on the care team, regardless of location," said *(X)*, Vice President, IS and CIO of *(hospital Y)*. • By using CPOE, they can more effectively diagnose illnesses and provide patients with the best possible care. • "Our choice of *(system X)* is an integral part of our ongoing commitment to advancing patient safety and quality of care through use of clinical information technology," said *(X)*, Chief Information Officer of *(hospital Y)*.
P2	**Value – clinical – success story:** Provide examples of how the innovation improves quality of medical care in an adopter organization Examples: • Through its ongoing use of CPOE and wireless barcode medication charting, *(hospital X)* has strengthened medication safety across the entire cycle of ordering, dispensing and administration. By combining CPOE and barcode charting, the organization has documented a 44 percent reduction in medication error rates to date, and will continue to expand its use of technology to enhance patient safety. • *(Hospital X)* began its implementation of CPOE in 2002, and since then has documented a 60 percent reduction in preventable adverse drug events. • *(Vendor X's)* CPOE and clinical documentation solutions were critical components of 2003 Nicholas E. Davies Award of Excellence winner *(hospital Y)* Integrating Clinical Information System, which is delivering outcomes that include reduced medical errors and medication turnaround time, as well as increased satisfaction for clinicians and patients. • The 606-bed tertiary care and teaching hospital in *(city X)*, uses a computerized physician order entry (CPOE) system that has already produced impressive results by decreasing medical errors, increasing decision support, promoting evidence-based medicine and establishing a higher standard of care.
P3	**Value – financial – rational:** Explain how the innovation improves financial performance of an adopter organization Examples: • *(Vendor X)* today announced two contracts for *(system Y)*, a comprehensive Healthcare Information System (HIS) developed by *(vendor X's)* Healthcare Solutions Division (HSD), that helps healthcare organizations improve patient care, reduce errors, and enhance revenue cycle management. • "*(Vendor X)* is committed to helping healthcare organizations achieve clinical excellence by delivering the highest quality care, while maximizing their resources by operating more cost-effectively," said *(Y)*, President and Chief Operating Officer of *(vendor X)*.

	• In recent years, CPOE and clinical information systems (CIS) have enabled a select number of large hospitals and medical centers to substantially lower costs related to patient registration and administration, and automate a wide range of clinical tasks -- including placing medication orders, scheduling diagnostic tests, and screening for drug interactions. • The costs caused by these errors increase the cost of the average hospital stay by $2,000, according to industry studies. This translates to more than $2 billion a year in nationwide hospital costs, excluding loss of worker productivity.
P4	**Value – financial – success story:** Provide examples of how the innovation improves financial performance of an adopter organization Examples: • In addition, CPOE has resulted in annual productivity savings at *(hospital X)* that are estimated at $2.5 million a year. • "*(Hospital X)* is eliminating the paper chart. As a result, they have saved more than $3.6 million. • The solution has resulted in an estimated $2 million in annual savings through elimination of printed documents and reduced labor costs. • The organization calculates that the system has enabled it to: …Realize $2.7 million annual cost savings from increased productivity and efficiencies; Reduce medical records costs by $322,445 annually; Reduce outcomes management administrative costs by $149,000 per year.
P5	**Value – operational – rational:** Explains how the innovation improves operational performance of an adopter organization Examples: • *(Vendor X's)* clinical information system will optimize *(hospital Y's)* practice by streamlining their workflow with *(vendor X's)* rules-based methodology. • "We must recognize that the average nursing age is 45 or older and that fewer and fewer people are coming into the field," *(X)* said. "The aging of the baby boomers means we have to find more efficient ways to take care of three times as many patients, with staffing levels that will be decreasing. The only way to do that is with information technology." • The streamlined communication and resulting efficiency provided by the system help nursing and pharmacy better attend to patients," said *(X)*, PharmD, *(vendor Y's)* director of professional affairs. "Medications are available for patient administration more quickly, and nurses are freed from the administrative tasks typically associated with manually communicating with the pharmacy." • …use of systems like *(system X)* and *(system Y)*, which integrate medication orders and pharmacy systems, can greatly reduce the amount of time from writing the order to administering the medication.
P6	**Value – operational – success story:** Provide examples of how the innovation improves operational performance of an adopter organization Examples: • As one of 184 healthcare sites utilizing *(vendor X's)* computerized physician order entry (CPOE) solution, *(hospital Y)* is saving physicians an estimated 30 to 60 minutes per shift by placing critical information into their hands at the point of care.

	• Using computerized physician order entry to speed radiology order time by three hours - *(hospital Y)* also showed reductions of 25 percent for laboratory orders, 43 percent for radiology orders and 64 percent for pharmacy orders. • As a result of our partnership with *(vendor X)*, technology has been extensively deployed into the medication use process, which has made our processes more efficient so that people can be more effective. • Going from paper to the new clinical information solution has helped me increase my efficiency…
P7	**Value – business – rational:** Explain how the innovation improves general business performance of an adopter organization Examples: • Our relationships with world- class technology leaders like *(vendor X)* enable us to deliver the technology that our customers need to achieve their business goals. • We believe the system will help our recruiting efforts by attracting new physicians who value the • role of technology The *(vendor X)* solutions play an extremely important role in helping us achieve our strategic objectives," said *(Y)*, *(hospital Z)* president and chief executive officer. • According to *(X)*, Director of Clinical Informatics at *(hospital Y)*, the health system's adaptation of *(system Y)* and other solutions in *(vendor Z's)* client/server architecture, are key to survival in the competitive marketplace.
P8	**Value – business – success story:** Provide examples of how the innovation improves general business performance of an adopter organization Examples: • The success *(hospital X)* has had in implementing *(system Y)* and other *(vendor Z)* solutions is shown in a post-conversion review that found quantitative benefits contributing to greater patient safety, improved care processes and overall staff and physician job satisfaction… • *(X)*, the medical center's vice president of Information Technology and chief information officer *(said):* "With a year of *(system Y)* use under our belts, I can say firmly that today we are doing a better job of coordinating care, reducing the potential for medical errors, containing costs and increasing the satisfaction of physicians, nurses, other clinicians and patients alike.
P9	**Value – IT – rational:** Explain how the innovation improves management of IT in an adopter organization Examples: • *(Vendor X)* outsourcing and remote hosting services help healthcare organizations use information technology strategically so they can achieve immediate results in performance and infrastructure, while supporting their long-term goals. *(Vendor X)* leverages its rich domain resources and uses recognized best practices to drive efficiencies far higher than most healthcare organizations could achieve on their own. • The goal of the strategic alliance is to provide innovative healthcare enterprise solutions

	that integrate with a wide array of legacy applications, are easier to implement and maintain, and are more adaptable to current and future customer needs -- at a lower total cost of ownership. • At the same time, we have developed an architecture that allows innovation to be incorporated without requiring a complete - and costly – platform replacement," said *(X)*, President, Integrated Solutions Division of *(vendor X)*, home to the *(system Y)* product. • As such, we are investing in and enhancing *(system Y)* to enable customers to drive forward with their process changes through incremental investments, which will make adoption of newer- generation systems more efficient and effective. This strategy maximizes customer outcomes and return on investment.
P10	**Value – IT – success story:** Provide examples of how the innovation improves management of IT in an adopter organization Examples: • For individuals at *(hospital X)*, *(system Y)* was the ideal solution to meet their short-term and long-term CPOE needs by having the flexibility to leverage the current investment in existing legacy systems. • *(Hospital X)*…leveraged an innovative and sophisticated Citrix solution to rapidly deploy new applications while providing concurrent access to legacy systems with minimal impact on caregiver workflow; migrated four systems with three separate logon identifiers and passwords into a unified sign-on process with a single username and password.
P11	**Alliance – adopter:** Advertise partnerships/ collaborations with other innovation entrepreneurs (e.g., vendors, consultants) Examples: • We are committed to being a partner in health to *(county X)* residents, and this long-term partnership with *(vendor Y)* will support that goal. • *(Hospital X)*, one of the largest pediatric medical centers in the United States and pediatric teaching hospital of the *(Medical School Y)*, has partnered with *(vendor Z)* in a strategic relationship to optimize pediatric care and research initiatives through the use of advanced healthcare information technology solutions. • "We're proud to be a part of *(hospital X's)* successful deployment of *(system Y)* and to continue our long partnership with this prestigious healthcare provider," said *(Z)*, *(vendor J)* president and chief executive officer. "*(Hospital X)* shares the *(vendor J's)* Vision of Health(TM) in which information is always available to clinicians across the organization -- including the fast-paced Emergency Department -- enabling the best possible decisions and patient outcomes." • *(Vendor X)* has partnered with the *(Health Network Y)* since 1996 to pioneer clinical information systems in various departments.
P12	**Alliance – vendor:** Advertise partnerships/ collaborations with other innovation entrepreneurs (e.g., vendors, consultants) Examples: • In order to give clinicians real-time access to the most current medical science at the point of care, *(vendor X)* today announced its acquisition of *(vendor Y)*, a subsidiary of *(healthcare provider Z)*.

	• *(Vendor X),* a part of *(company Y), (vendor Z),* and *(healthcare provider J)* jointly announced today their collaboration to measure the effectiveness of advanced clinical decision support technology to reduce adverse drug events in the ambulatory care setting. • *(X),* general manager of Business Solutions Delivery at *(vendor Y),* note that *(vendor Y's)* alliance with *(vendor Z)* is an essential component of this project's success and the company's overall reputation for consistently delivering value. "Our relationships with world- class technology leaders like *(vendor Z)* enable us to deliver the technology that our customers need to achieve their business goals." • *(Vendor X),* an international provider of clinical applications, software toolkits, and development consulting services to the healthcare industry, and *(company Y),* an international law firm and HIPAA industry leader, announced today their strategic relationship for the delivery of HIPAA compliance services and software solutions to the healthcare industry.
P13	**Alliance – field-level actor:** Advertise affiliation with influential field level actors Examples: • We are even more excited about their commitment to participate in the ASHP *(American Society of Health System Pharmacists)* Foundation's study for a fail-safe medication management system design using the *(vendor X)* System. We look forward to a successful implementation of the *(vendor X)* System and to gaining useful research for the ASHP study which will ultimately create new standards in healthcare for delivering patient safety and improving patient outcomes," said Eric Paul, President, *(vendor X).* • *(Vendor X)* and *(vendor Y)* are working with The Leapfrog Group for Patient Safety to research and evaluate new potential evidence-based measures of quality of care for six complex health care conditions. • These efforts are supported by patient safety advocates such as The Leapfrog Group and the Institute of Medicine of the National Academies, which recommend CPOE and automation to reduce the thousands of medical errors estimated to occur annually. Combined with regulatory compliance requirements, these factors will be instrumental in shaping the future of healthcare delivery. • The focal point of the program was special guest speaker Newt Gingrich, who shared his vision of a 21st Century Intelligent Health System that is individual-centered, knowledge-intense and innovation-rich. "A 21st Century Intelligent Health System would be supported by electronic information-sharing that safeguards each patient's right to privacy and increases patient safety by giving clinicians swift access to medical information," Gingrich commented.
P14	**Reputation – vendor:** Emphasize the innovation entrepreneurs' strong reputation in the innovation domain and related areas Examples: • *(Company X),* another healthcare IT research and consulting firm, confirms *(vendor Y's)* CPOE leadership in its 2003 CPOE Perception report. *(Vendor Y's)* CPOE solution was rated "above average" in nine of 10 performance categories, including: vision/clinical strategy, architecture, physician use, end-user presentation, integration, computer-based patient record offering and clinical decision support. The *(company X)* report also indicates 76 percent of CPOE decision- makers would look to *(vendor Y)* when evaluating CPOE solutions, a significantly higher-percentage than the next supplier. • "We chose *(vendor X)* because they understand the needs of a pediatric hospital and the vital role healthcare IT plays in it," said *(Y),* MSN, RN, senior vice president of patient care

	operations at *(hospital Z)*. "*(Vendor X)* has proven it understands clinician workflow and how to implement a successful computerized physician order entry (CPOE) solution. • Employing their deep experience with healthcare information systems, healthcare operations and information technology expertise, *(vendor X)* and *(vendor Y)* will work together to implement and integrate the clinical applications and technology throughout healthcare organizations. • *(Vendor X)*, dedicated to applying innovative handheld computing and Internet technologies to improve the quality and efficiency of healthcare delivery, today announced the appointment of *(Y)*, MD, to Medical Director…*(Y's)* diverse background in medicine has enabled him to develop broad and deep clinical domain knowledge which will make him a key contributor to *(vendor X's)* ongoing product development…
P15	**Reputation – adopter:** Describe (favorable) characteristics/stress reputation of the adopter organization Examples: • A premier pediatric organization and recognized for the past 14 years as a one of "America's Best Hospitals" in U.S. News & World Report, *(hospital X)* has entrusted *(vendor Y)* to assist with the healthcare it provides to 310,000 children each year, through its *(system Z)* solutions. • *(Hospital X)*, a 136-bed facility and leader of rehabilitation and specialized acute care throughout the Midwest, announced today its plans to implement the *(vendor Y)* Point of are Patient Management System. • *(Hospital X)* is a joint venture involving the Indianapolis- based *(health network Y)* and nationally respected cardiologists and cardiovascular surgeons. It will have 88 patient beds, 32 outpatient rooms, four surgery suites, six cardiac catheterization labs, and a cardiac emergency department. • *(Healthcare provider X)*, one of New York's largest hospital systems, is an integrated delivery network comprising four academic medical centers and numerous ambulatory clinics that treats over 100,000 inpatients and has more than 1.3 million outpatient visits every year.
Strategies – Normative Legitimacy	
N1	**Normative – moral:** Stress congruence of the innovation with prevailing moral norms; provide examples Examples: • *(Hospital X)* is eliminating the paper chart. As a result, they have saved more than $3.6 million. They also have saved countless lives. • He described electronic patient records, computerized physician order entry (CPOE), and medication bar coding as the kinds of technology innovations that can help save lives and money now and in the future. • This partnership with *(vendor X)*, MIS staff, and facility staff continues to strengthen *(hospital Y's)* commitment to its Mission "to serve persons with the greatest care and love in a community that celebrates the gift of life." • "As a surgeon and a hospital administrator, knowing that the *(system X)* can save even one life, I am convinced that its cost is money well- spent," stated Dr. *(Y)*, surgeon and Director of *(hospital Z)*.

N2	**Normative – transformation:** Emphasize the ongoing transformation of the adopters' industry; stress the enabling role of the innovation Examples: • The *(vendor X – vendor Y)* alliance comes at an important time in the healthcare technology industry as momentum increases for the deployment of advanced clinical information technology that helps improve patient safety and reduces medical errors. • "The Failsafe Design project will represent the changing paradigm of U.S. Hospital care and medication-related patient safety. • "With a healthcare industry in transformation, it's essential that we recognize providers who have creatively deployed clinical and technology solutions to improve patient safety, institute more efficient practices and reduce healthcare costs," said *(X)*, Vice President of Operations, *(industry analyst Y)*. • "It's this kind of visionary thinking that will transform the way health care is delivered to truly impact and improve patients' lives," said *(X)*, chairman and chief executive officer of *(vendor Y)*.
Strategies – Regulative Legitimacy	
R1	**Regulative – compliance:** Stress compliance with legal and quasi-legal rules and regulations Examples: • Using *(vendor X's)* clinical system has allowed us to focus our efforts on patient safety initiatives recommended by the Institute of Medicine. • The functionality also supports our nursing team's commitment to the Joint Commission on Accreditation of Healthcare Organization's national patient safety goal to ensure that patients are accurately identified and medical information verified prior to medication administration and other procedures." • These efforts are supported by patient safety advocates such as The Leapfrog Group and the Institute of Medicine of the National Academies, which recommend CPOE and automation to reduce the thousands of medical errors estimated to occur annually. Combined with regulatory compliance requirements, these factors will be instrumental in shaping the future of healthcare delivery. • *(System X)* enhances the traditional role of the HIS by improving enterprise-wide communications, supporting clinical decision-making, and assisting healthcare organizations in conforming to regulatory issues sanctioned by the Health Insurance Portability and Accountability Act (HIPAA) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) wherein it addresses audit trails, privacy, consumer control and authorization to release protected health information.

Table B2: Inter-Coder Percent Agreement by Code (Strategy)

Strategy	Percent Agreement
C1 System - functionality	0.8
C2 System - configuration	0.9
C3 System - characteristics	0.8
C4 Implementation - strategies	0.8
C5 Implementation - successes	0.9
C6 Implementation - challenges	0.9
C7 Diffusion - organizational	0.8
C8 Diffusion - individual	0.9
P1 Value - clinical - r	0.8
P2 Value - clinical - ss	1
P3 Value - financial - r	0.7
P4 Value - financial - ss	1
P5 Value operational - r	0.8
P6 Value - operational - ss	0.9
P7 Value - business - r	0.9
P8 Value - business - ss	0.8
P9 Value - IT - r	1
P10 Value - IT - ss	1
P11 Alliance - adopter	0.9
P12 Alliance - vendor	0.9
P13 Alliance - field-level actor	0.8
P14 Reputation - vendor	0.6
P15 Reputation - adopter	0.7
N1 Normative - moral	1
N2 Normative - transformation	0.9
R1 Regulative - compliance	0.8
Aggregate Agreement	**0.825**

Table B3: Count of Press Releases by Vendor by Year

Vendor Code	1998	1999	2000	2001	2002	2003	2004	2005	Total
V01								1	1
V02	1							13	14
V03								2	2
V04			1	3	9	8	6	9	36
V05						1	2	1	4
V06								3	3
V07							1	1	2
V08							2		2
V09							1		1
V10				1	1		1		3
V11						3	5		8
V12					1	1	3	1	6
V13							1		1
V14							1		1
V15				1			1		2
V16						1	2		3
V17						1	1		2
V18						1	1		2
V19		2			6	6	4		18
V20						1	1		2
V21						1			1
V22					1	1			2
V23					1	1		1	3
V24					1				1
V25					1				1
V26				3	2				5
V27				8					8
V28				1					1
V29				1					1
V30		2		1					3
V31		1							1
V32					1				1
V33					1				1
Total	1	5	1	19	25	26	33	32	142

VITA

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