



**Universitat Ramon Llull**

## DOCTORAL THESIS

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## Table of Contents

ACKNOWLEDGEMENTS.....	2
ABSTRACT.....	10
DEFINITIONS OF KEY CONCEPTS .....	12
1 INTRODUCTION .....	15
1.1 Thesis Structure .....	18
1.2 Transaction Cost Economics .....	21
1.2.1 Hybrid Organizational Forms and Networks .....	22
1.2.2 Motives for choosing hybrid/network organizational forms .....	26
1.3 Ecosystems.....	28
1.4 Platforms.....	30
1.5 Summary of Subsequent Chapters .....	34
1.5.1 Chapter 2: Governance mechanisms in affiliate marketing programs in Spain 35	
1.5.2 Chapter 3: Control in technology ecosystems.....	37
1.5.3 Chapter 4: Rationalization of empirical analysis and theory development.....	38
2 GOVERNANCE MECHANISMS IN INTERNET-BASED AFFILIATE MARKETING PROGRAMS IN SPAIN.....	40
2.1 Introduction: .....	40
2.2 Research background.....	43
2.2.1 Affiliate Marketing.....	43
2.2.2 Types of Affiliate Programs .....	44
2.2.3 Affiliate Marketing Channel Structure.....	45

2.2.4	Affiliate Business Models.....	46
2.2.5	Affiliate Promotion Tools.....	47
2.2.6	Commission Pricing.....	48
2.2.7	Governance Mechanisms: Agency Theory and Transaction Cost Analysis Theory.....	48
2.3	Data Collection and analysis .....	52
2.4	Results.....	56
2.4.1	Formal Contracts .....	56
2.4.2	Partner Selection .....	58
2.4.3	Incentives.....	60
2.4.4	Monitoring.....	62
2.5	Discussion.....	65
2.5.1	Summary of Findings .....	65
2.5.2	Implications for managers of affiliate marketing programs.....	66
2.6	Conclusion.....	66
3	GOVERNANCE MECHANISMS IN AN ERP-VENDOR ECOSYSTEM.....	69
3.1	Introduction .....	69
3.2	Background Literature .....	74
3.2.1	Platforms .....	74
3.2.2	Control and Governance.....	77
3.2.3	Legitimacy and Status.....	79
3.2.4	Ecosystem Heterogeneity and Cohesion .....	80
3.3	Data .....	81
3.3.1	Sales and Implementation.....	83
3.3.2	Levels of Control .....	87
3.3.3	Value to Periphery.....	89
3.3.4	Value to Core .....	90

3.3.5	Community Mechanisms .....	90
3.4	Theory Development .....	91
3.5	Limitations and Future Research .....	100
3.6	Conclusion .....	101
4	RATIONALIZATION OF EMPIRICAL ANALYSIS AND THEORY DEVELOPMENT .	106
4.1	Introduction .....	106
4.2	Analysis of Strong Core and Fragmented Ecosystems along TCE Dimensions.....	109
4.2.1	Asset specificity and transaction frequency: Business Software .....	110
4.2.2	Asset specificity and transaction frequency: Affiliate Marketing.....	112
4.2.3	Uncertainty: Business Software.....	113
4.2.4	Uncertainty: Affiliate Marketing.....	115
4.3	Theory Development .....	116
4.4	Discussion.....	127
4.4.1	External Value Creation and Innovation.....	127
4.4.2	Graduation and Self-Selection of Control Mechanisms .....	129
4.4.3	Balancing Creation and Control.....	130
4.4.4	Heterogeneity and Variability.....	131
4.4.5	Legitimacy and Status .....	134
4.4.6	Firms, Markets, and Communities.....	135
4.5	Additional Conceptual Development.....	136
4.5.1	Example 1. Standardized implementation methodology across heterogeneous implementations .....	141
4.5.2	Example 2. Competitive balance between partners .....	143
4.5.3	Example 3. Complement generativity and scale economies.....	146
4.5.4	Example 4: Use of merchant brands by affiliates .....	149
4.5.5	Reflection.....	151

4.6	Conclusions .....	153
5	CONCLUSIONS AND FUTURE RESEARCH .....	156
5.1	Research Agenda.....	166
5.2	Implications for Managers .....	168
5.3	Future Research .....	171
5.3.1	Multi-platform “galaxy” ecosystems.....	172
5.3.2	Paradox, tensions, dualities and dualisms.....	175
5.3.3	Organizational boundaries .....	179
5.4	Concluding remarks .....	181
6	REFERENCES.....	183
7	APPENDIX: SUMMARY OF PLATFORM MECHANISMS.....	198
7.1.1	Focus: Product and channel development.....	198
7.1.2	Focus: Sales (relationship between Software Vendor and partner) .....	199
7.1.3	Focus: Sales and implementation (relationship between partner and customer).....	200
8	APPENDIX – SUMMARY OF 3GERP PROJECT AREA E: ORGANIZATION IMPLEMENTATION AND PARTNERSHIP MODELS.....	201
8.1	Participants .....	201
8.2	Introduction .....	201
8.3	Add-ons and Vertical Solutions.....	202
8.4	Fee Structure.....	203
8.5	Recruiting .....	204
8.6	Training of Consultants .....	205
8.7	Activation of Partners .....	206
8.8	Relationship Between Partners .....	206

8.9	Certification of Partners.....	207
8.10	Localization .....	208
8.11	Partner Monitoring .....	208
8.12	Methodology (Sure Step).....	209
8.13	Product Updates (roadmap) .....	210
8.14	Partner Levels.....	210
8.15	Sales Support from Microsoft .....	210
8.16	Marketing and Branding .....	211
8.17	Technical Support and Maintenance .....	211
8.18	Tools (e.g. PartnerSource).....	211
8.19	Training of Customers.....	212
9	ANALYSIS AND SELECT QUOTES FROM 3GERP INTERVIEWS IN SPAIN .....	212
9.1	Abstract:.....	212
9.2	Interviews Included:.....	213
9.3	Fee Structure.....	214
9.3.1	Fee Structure - General .....	214
9.3.2	Fee Structure - Software License Pricing: .....	215
9.3.3	Fee Structure - Maintenance Fee Pricing: .....	215
9.4	Recruiting .....	216
9.4.1	Recruiting - General.....	216
9.4.2	Recruiting - Microsoft Support .....	217
9.4.3	Recruiting – Type of Resource .....	217
9.5	Training of Consultants .....	217
9.5.1	External Training Centers .....	217
9.5.2	Training – Type of Resource .....	219
9.5.3	Training – Microsoft Support.....	219

9.6	Vertical Solutions and Add-ons .....	220
9.6.1	Add-ons - General.....	220
9.6.2	Add-ons - Number of Verticals .....	221
9.6.3	Add-ons - Certification.....	221
9.6.4	Add-Ons – Microsoft Support.....	223
9.7	Relationship Between Partners .....	224
9.7.1	Relationship Between Partners – General.....	224
9.7.2	Relationship Between Partners – Microsoft Support.....	225
9.7.3	Relationship Between Partners - Add-ons.....	226
9.7.4	Relationship Between Partners – International .....	226
9.8	Certification of Partners.....	227
9.8.1	Certification of Partners - General.....	227
9.9	Localization .....	228
9.9.1	Localization – General .....	228
9.9.2	Localization – Microsoft Support.....	229
9.9.3	Localization – Add-ons.....	229
9.9.4	Localization – Collaboration Between Partners .....	229
9.10	Activation of Partners .....	229
9.10.1	Activation of Partners - General .....	229
9.11	Partner Monitoring .....	230
9.12	Method (Sure Step).....	232
9.12.1	Method (Sure Step) – Adoption.....	232
9.12.2	Method (Sure Step) – Background .....	233
9.13	Product Updates (roadmap) .....	237
9.14	Partner Levels.....	239
9.15	Sales Support from MS.....	239
9.16	Marketing and Branding .....	241



9.16.1 Marketing and Branding – Microsoft Support.....	241
9.17 Tech Support and Maintenance.....	242
9.18 Tools (e.g. PartnerSource).....	242
9.19 Training of Customers.....	243
9.20 Other issues.....	244
9.20.1 Background:.....	244
9.20.2 Product	244
9.20.3 Externalization .....	245
9.20.4 Microsoft Services .....	245
9.20.5 Market	245

## **ABSTRACT**

Platforms and ecosystems represent increasingly ubiquitous models for organizing economic activity in business and technology. This thesis represents an effort to explain observed phenomena in two distinct ecosystems: affiliate marketing programs and business software. The overall practical business objective for each is to understand how the core firm(s) in each domain manage the efforts of hundreds or even thousands of contributors whose work centers around the core company's platform. In our efforts to address this question, we apply multiple theoretical lenses, each with its own value and limitations. These include agency theory and transaction cost economics, platforms and ecosystems, and paradox theory. Once the body of the empirical observations had been recorded, we returned to review recent research on generativity, or the ability of a self-contained system to create, generate or produce a new output, structure, or behavior without any input from the originator of the system. We therefore stated our overriding research question as: "How do platform owners design their ecosystems for generativity, while maintaining the right level of control over the evolution of the platform".

This thesis addresses several gaps in the literature. First, prior research on organizational boundaries has relied primarily on single theories such as transaction cost economics. While we apply TCE to our two research domains, we complement this analysis with the more recent theories of platforms and ecosystems, offering further theoretical grounding and extension based on our empirical observations. Our research in chapters 3 and 4 is based upon several premises. First, we suggest that there is a fundamental tradeoff between creativity and control salient in technology platforms or ecosystems. Creativity without control can lead to excessive fragmentation and variable quality, which could create a negative overall perception of the ecosystem by contributors, users, and customers, could affect the ability of niche contributors to profitably develop their activities. In addition, there is the risk that unregulated third-party activity may take ecosystem development in directions

inconsistent with the vision of the core sponsor. On the contrary, excessive control or poorly designed control mechanisms can hurt creativity and innovation, also damaging the health and growth of the ecosystem. Second, we argue that research on governance and control mechanisms is less developed or mature than discourse on creativity phases, and therefore warrants attention in order to understand this critical interdependence between creativity and control. Finally, we contend that prior research has tended to view technology ecosystems as *homogeneous*, assuming that governance is uniform for all parties. We propose that there is a need for empirical research which adopts a more subtle view of technology ecosystem governance, acknowledging that participant roles vary, but more importantly, governance across the ecosystem must embrace heterogeneity, even for similar participant roles. Further, much of the extant literature related to relationships between firms has tended to focus on either creation or on control, but there is a need for more detailed empirical studies which address the tension between these two forces.

The methodology used for our two studies is primarily qualitative, with 11 semi-structured interviews and data from 136 affiliate programs in Spain for the affiliate marketing domain, and 31 semi-structured interviews in the business software domain.

This thesis makes several contributions to extant theory, including substantial empirical observations in two large and complex business ecosystems, and theoretical development pertaining to efforts of core firms in such ecosystems to encourage third-party generativity while maintaining a degree of control over the third-party contributions to the core platform.

## DEFINITIONS OF KEY CONCEPTS

**Ecosystem**: A business ecosystem was first defined by Moore (1993) as “an economic community supported by a foundation of interacting organizations and individuals—the organisms of the business world. The economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The member organisms also include suppliers, lead producers, competitors, and other stakeholders. Over time, they coevolve their capabilities and roles, and tend to align themselves with the directions set by one or more central companies. Those companies holding leadership roles may change over time, but the function of ecosystem leader is valued by the community because it enables members to move toward shared visions to align their investments, and to find mutually supportive roles” (p. 23).

**Generativity**: Generativity refers to the ability of a self-contained system to create, generate, or produce a new output, structure, or behavior without any input from the originator of the system (Avital and Te’eni 2009, Tilson et al. 2010). Zittrain (2006) offers another definition of generativity as “a technology’s overall capacity to produce unprompted change driven by large, varied, and uncoordinated audiences” (p. 1981). The added contribution of the Zittrain definition is that it emphasizes the heterogeneity of the third-party contributors, an issue which increases the complexity of ecosystem governance.

**Governance and Control**: The objective of control in transaction cost analysis is to minimize the cost of exchange by minimizing the impact of opportunism on channel members, where opportunism can be defined as “some form of cheating or undersupply relative to an implicit or explicit contract” (p. 48, Wathne and Heide, 2000). In much of the literature surveyed in this thesis, *control* and *governance* are used interchangeably. In fact, in chapter 2 of this thesis our primary framework is derived from the work of Wathne and Heide (2000) who identify 4 primary *control* mechanisms: formal contracts, partner selection, incentives, and monitoring.

However, in our research on ecosystems and platforms we consider the overriding construct as governance, where control is one key objective and encouraging creation the other. Governance has been defined differently depending on context. For example, Williamson (1975, 1991) is focused on governance *form* (defined below). In this research we have adopted the following definition from Heide (1994): “a multidimensional phenomenon, encompassing the initiation, termination, and ongoing relationship maintenance between a set of parties”. (p. 72). This definition is a broader concept than control since it includes aspects of creation and structuring of inter-firm relationships as well as aspects of monitoring and enforcement.

**Governance Form:** Transaction cost theory (Coase 1937, Williamson 1975) was explains a firm’s choice between two options: an internal hierarchical structure for organizing its economic activities, or a market-like interaction between independent firms. These two options may be represented as a choice between two governance forms: markets and hierarchies. Williamson (1991) later added the possibility of hybrid forms, which include “various forms of long-term contracting, reciprocal trading, regulation, franchising, and the like” (p. 280). Thorelli (1986) proposed the network paradigm as a supplement to the theory of the firm, suggesting that networks lie between markets and hierarchies and that, in fact, many forms of organization which Williamson identified as markets are actually networks. Thorelli defines networks as “two or more organizations involved in long-term relationships” (p. 37). Jarillo (1988) defines *strategic networks* as “long-term, purposeful arrangements among distinct but related for-profit organizations that allow those firms in them to gain or sustain competitive advantage vis-a-vis their competitors outside the network” (p. 32). While participating firms maintain some independence (otherwise they would qualify as Williamson’s conception of hierarchies), the relationships between participants are key to competitive positioning, and they require a hub firm which creates and maintains the network.

**Infrastructure:** *Infrastructure* can be defined as the underlying physical and organizational structures needed for the operation of a society or enterprise, and the services and facilities necessary for an economy to function (Tilson et al. 2010).

*Information infrastructure* can be defined as “A shared, open (and unbounded), heterogeneous and evolving socio-technical system ... consisting of a set of IT capabilities and their user, operations and design communities” (Hanseth and Lyytinen 2010, p. 4). This concept has been extended to the more encompassing *digital infrastructures*, defined as digital infrastructures can be defined as the constitutive information technologies and organizational structures, along with the related services and facilities necessary for an enterprise or industry to function (Tilson et al. 2010).

**Platform:** Iansiti and Levien (2004a) define a platform as “an asset in the form of services, tools, or technologies that offer solutions to others in the ecosystem” (Iansiti and Levien 2004a, p. 74). Platforms are systems defined by markets with core components made by one company and complements made by a variety of companies. They have two primary characteristics: 1) they should perform an important function within a ‘system of use’ or solve an important technical problem within an industry; and (2) it should be easy to connect to or build upon the core solution in order to expand the system of use and allow new and even unintended end-uses. The core firm’s product has important, but limited, value when used alone, but substantially increases in value when used with complements (Gawer and Cusumano, 2002, 2008).

## 1 INTRODUCTION

*“Firms are not islands but are linked together in patterns of co-operation and affiliation. Planned co-ordination does not stop at the boundaries of the individual firm but can be effected through co-operation between firms” (Richardson, 1972, p. 895)*

*“The new organizational forms literature essentially asserts that hierarchies are becoming increasingly infused with elements of the market...and markets are likewise claimed to be increasingly infused with characteristics of the hierarchy.” (Foss 2002)*

The above statements summarize the phenomenon of firms increasingly moving towards what Williamson (1991) called hybrid organizational forms. In transaction cost economics, hybrid forms are a means to economize on transaction costs in interorganizational relationships when "parties to the transaction maintain autonomy but are bilaterally dependent to a nontrivial degree" (Williamson, 1991, p. 271). In the extensive literature on new organizational forms which has developed since, authors have noted the myriad possibilities for the design of “boundary-spanning” organizational forms, primarily resulting from the torrid pace of development of communication and information technologies, including the growth and continuous evolution of the Internet, as well as declining computing and communication costs (Daft and Lewin, 1993; Foss, 2002; Zott and Amit, 2009).

These changes in the research literature are a reaction to increasingly prevalent modes of organizing economic activity in business and technology, platforms and ecosystems. Technology platforms have emerged as a novel way of organizing product portfolios, harnessing the creative efforts of numerous independent actors to produce complements and services that increase the overall value of the core product. Platform strategies are well known from both the iPhone and Android platforms, but are also common in gaming consuls such as Xbox, Wii and PlayStation, as well as social platforms Facebook and Twitter. Twitter, for example, claims to have over 750,000 developers and over 1 million apps (an increase from 150,000 apps a year earlier), with a new app registered every 1.5 seconds (Twitter 2011). While Twitter itself has experienced significant growth,

much of the firm's success has been driven by independent companies in its ecosystem.

Technology platforms often represent exclusive options; the use of complements and services of one platform is largely incompatible with another. This can result in platform wars, such as the context between Google's Android mobile operating system vs. Apple's iOS. There are some clear similarities between the platforms, such as a comparable user interface and gesture control, and significant indirect network effects derived from third-party development of applications. According to Xylogic, a company that indexes app store downloads, as of October 2011, Apple iOS users were downloading 1.45 billion apps per month compared to 640 million for Android users (Takahashi 2011). However, there are also some pronounced differences between the two models: Apple maintains tight control over its ecosystem, while Android maintains a more open model. Apple produces both hardware and software as a single package, while Google offers Android free to hardware manufacturers such as HTC, Samsung, and LG, who are at liberty to make hardware decisions and even modifications to the final operating system. Apple must approve each new application for iOS, while Google has no pre-approval process and leverages the Android user-community to flag apps in violation of Google policies (Claburn 2010). While Google's model offers tremendous scalability, the fragmentation creates challenges for application developers since some applications may operate differently on various devices.

The growth of apps or complements leverages the contributions of participants who are not directly employed by the technology core sponsor to create complementary products and services to address the needs of a large, heterogeneous group of end-users, in a manner that would be prohibitively difficult for the core to do alone. A platform strategy purposefully cultivates an ecosystem of complementors for 'generativity'. Generativity refers to the ability of a self-contained system to create, generate or produce a new output, structure, or behavior without any input from the originator of the system (Tilson et al. 2010). It includes both the technology artifacts, as well as the social meanings and behaviors



that embed the artifacts (Avital and Te'eni 2009). Zittrain (2006) offers another definition of generativity as “a technology’s overall capacity to produce unprompted change driven by large, varied, and uncoordinated audiences” (p. 1981). However, where generativity is the main objective, un-controlled creative output is not always positive for the health of the ecosystem (Hagiu 2010). Letting 1,000 flowers grow can, in many cases, produce services and complements of lesser quality, resulting in a negative customer experience, thereby seriously harming the reputation and economic sustainability of the product platform (Boudreau 2011). The added contribution of the Zittrain definition is that it emphasizes the heterogeneity of the third-party contributors, an issue which increases the complexity of ecosystem governance. So the design of governance mechanisms for technology ecosystems is not a trivial task; the challenge is to establish control mechanisms that appropriately direct participant behavior without excessively constraining the desired level of generativity. This creates a natural tension in the ecosystem, one that defines many of the characteristics of the resulting governance mechanisms. This suggests that a creativity-control tradeoff is a substantial challenge in technology ecosystem governance.

As an example of the give-and-take that platform owners must manage, consider the Apple App Store review process used in iPhone and iPad applications. The process has been criticized as being overly restrictive and lacking transparency. Taking note that as of December 2011, Google now commands 47.3% of the smartphone market compared to 29.6% for Apple (comScore 2012), Apple decided to allow their developers the use of third-party development tools after previously banning their use, and has succumbed to pressure to share the exact guidelines used to decide whether a particular application should be admitted to the App Store (Geere 2010). This ecosystem clash has only just begun, with both companies extending their platforms to the PC, tablets, and soon the television.

Hence, as these types of boundary-spanning organization forms which rely on third-party contribution become more prevalent, platform owners must endeavor to find the right level of control without overly restricting generativity. Tiwana et al.

(2010) refer to this as the “Goldilocks Governance Problem”; that a platform can exhibit too much, too little, or the “just-right” level of governance (p. 679). This, then, is our core research question which guides this thesis:

**RQ 1:** How do platform owners design their ecosystems for generativity, while maintaining the right level of control over the evolution of the platform?

We address this research question through an empirical study of two distinct research domains, to which we apply various theoretical lenses.

### 1.1 Thesis Structure

This thesis represents an exploration and analysis of two distinct domains, both of which may be described as a hybrid organizational forms according to transaction cost economics, or platforms/ecosystems according to the nomenclature in that theory base. Our research in each domain began with observations of certain phenomena in their respective business contexts. Next, we experiment with different theoretical lenses in an iterative effort to gain insight into our observations. Finally, we analyze the results and summarize our findings which with the intention of advancing existing theory. Table 1.1 below summarizes the sample studies, research frameworks applied, and theoretical contribution for each chapter in this thesis.

Table 1.1: Overview of studies composing this dissertation				
Chapter	Title	Sample	Research Framework	Theory Contribution
2	Governance mechanisms in Internet-based affiliate marketing programs in Spain	Data from 136 affiliate programs in Spain, 11 semi-structure interviews	<i>Agency theory</i> (Eisenhardt, 1989; Jensen and Meckling, 1976; Ross, 1973), <i>transaction cost economics</i> (Coase, 1937; Williamson, 1975, 1985, 1991), <i>governance mechanisms</i> (Wathne and Heide, 2000)	Analysis in a novel research domain of 4 primary governance mechanisms: formal contract, partner selection, incentives, and monitoring; recommendations for managers of affiliate marketing programs.
3	Control in Technology Ecosystems	31 semi-structured interviews with entities associated with the enterprise software of a major, multinational software manufacturer	Ecosystems (Messerschmitt and Szyperski 2003, Iansiti and Levien 2004a, 2004b, Moore 1993), platforms (Baldwin and Woodard 2010, Boudreau and Hagiu 2009, Gawer and Cusumano 2002, 2008)	Extensive analysis of governance mechanisms put in place by the core firm to incentivize creation and control output; additional findings inherent to the domain studied not sufficiently addressed by ecosystem/platform literature to date.
4	Rationalization of empirical analysis and theory development	Data from affiliate marketing and business software domains.	Transaction cost analysis (see above), platforms and ecosystems (see above), paradox theory (Farjoun 2010, Hanseth and Lyytinen 2010, Tilson et al. 2010, Tiwana et al. 2010)	Analysis of the ability of TCE dimensions to explain our observed phenomena; additional explanatory value provided by theory on platforms/ecosystems; preliminary observations of paradoxes manifest in our research domains, including the notions of conflicting dualisms and enabling dualities.

Our research begins in chapter 2 with the affiliate marketing ecosystem in Spain. We apply agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976; Ross, 1973) and transaction cost economics (Coase, 1937; Williamson, 1975, 1985, 1991), as they represent the predominant theories applied in extant research to analyze the economic activity between firms.

Santos and Eisenhardt (2005) argue that work on organizational boundaries is commonly focused on single theories such as transaction cost economics, but that additional insights may be achieved by exploring the relationship among different conceptions. In accordance with this suggestion, in chapter 3 we apply platform and ecosystem theories to the second research domain analyzed in this thesis, business software. We contend that these theory bases complement transaction cost economics; as TCE tends to take a dyadic approach to transactions between two (or more) firms, we found it lacking in its ability to explain the entirety of the complex relationships between multiple, heterogeneous firms. TCE tends to focus primarily on the larger firms which organize the economic activity, and insufficient attention is given to the role of complementors or niche players deemed critical to the growth and overall health of the ecosystem. In addition, theory on platforms and ecosystems concentrate on managing in order to maximize value creation by third parties while attaining some degree of value appropriation, a concept which is not directly addressed in TCE. As chapters 2 and 3 have applied distinct theories to distinct research domains, in chapter 4 the objective of our analysis is to rationalize these different approaches into a more cohesive theory.

In chapter 4 we compare and contrast the theories of transaction cost economics, with its well-documented theoretical and empirical grounding, with the more recent concepts of platforms and ecosystems, which have yet to receive such extensive treatment. It is our intention to position these newer theories against the backdrop of TCE as a way to further ground them in extant theory, to look for complementarities between them, and to open potential paths for future research.

We end chapter 4 with preliminary observations of paradoxes manifest in our research domains as a return to the issue of tensions in ecosystems. We contend that these tensions merit further attention as theory development remains immature. That said, some recent studies have shed new light on the inherent conflicts which exist in technology ecosystems. Hanseth and Lyytinen (2010) describe 4 design classes for IT systems. In order of increasing complexity, these are: IT capabilities, applications, platforms, and information infrastructures. An information

infrastructure is defined as a “shared, open (and unbounded), heterogeneous and evolving socio-technical system ... consisting of a set of IT capabilities and their user, operations and design communities” (p. 4). These digital infrastructures, due to their open nature and heterogeneity, must increasingly be designed to embrace the new phenomenon of *generativity* (Tilson et al. 2010). Tilson et al. (2010) further suggest that we can obtain a deeper understanding of the dynamics and generativity of digital infrastructures by studying the paradoxes of change and control. The paradox of change reflects the need for stability in digital infrastructures in order to develop new capabilities; as well as flexibility, to ensure unbounded growth. The paradox of control relates to the need to derive value from generativity, while at the same time ensuring that the results are beneficial to the overall ecosystem.

While the primary data collection and analysis in chapters 2 and 3 of this thesis was conducted prior to the research cited above on generativity and the paradoxes of change and control, we nevertheless consider our work to be in step philosophically with these issues, and our hope is to make some contribution to extant theory both through our empirical observations of two novel data sets, as well as our discussion of the data and further theory development.

We now continue the introduction with a review of the relevant theory on transaction cost economics, the primary theory base applied in the second chapter of this thesis (and to which we return in chapter 4). Research on platforms and ecosystems provides additional tools for extending the analysis and uncovering new dimensions, and we continue the introduction with a discussion of prior research in this area. Finally, we will conclude the introduction with a brief description of chapters 2, 3, and 4 of the thesis where the bulk of our research is described, including the research questions we have addressed and primary conclusions reached.

## 1.2 Transaction Cost Economics

Transaction cost theory (Coase 1937, Williamson 1975) was principally envisioned to explain a firm’s choice between two options: an internal hierarchical structure for

organizing its economic activities, or a market-like interaction between independent firms. These two options may be represented as a choice between two governance *forms*: markets and hierarchies. As its name implies, transaction cost analysis focuses on the attributes of a transaction that determine variations in its costs. Three major characteristics are identified as germane to the determination of the appropriate organizational form: asset specificity, exchange uncertainty, and transaction frequency (Williamson 1985). As summarized by Santos and Eisenhardt (2005) “In a context of bounded rationality of economic agents and exchange uncertainty, the precise terms of transactions are costly to define, monitor, and enforce, leading to incomplete contracts” (p. 492). Bounded rationality refers to the fact that while decision-makers intend to act rationally, their ability to do so is restricted by their cognitive capability and limits on their rationality. These limits become particularly problematic in uncertain environments “in which the circumstances surrounding an exchange cannot be specified *ex ante* (environmental uncertainty), and performance cannot be easily verified *ex post* (behavioral uncertainty)” (Rindfleisch and Heide 1997, p. 31). This creates an adaptation problem, where it is difficult to modify arrangements as circumstances change, and therefore contracts will be incomplete as it is either impossible or too expensive to anticipate all possible circumstances and contingencies which may arise.

### *1.2.1 Hybrid Organizational Forms and Networks*

After its initial conception, Williamson (1991) amended the binary choice of market or hierarchy to include the possibility of hybrid forms, which include “various forms of long-term contracting, reciprocal trading, regulation, franchising, and the like” (p. 280). Hybrids become an attractive alternative when investments are specific enough to create contractual hazards but not enough to justify integration with its related difficulties, and where uncertainties are significant enough to require greater coordination than that provided by markets (Williamson 1991). Responding to a perceived need for a more precise definition, Menard (2006) defines hybrid forms as follows: “underlying this diversity of arrangements is the intuition that they

participate to the same ‘family’ of agreements among autonomous entities doing business together, mutually adjusting with little help from the price system, and sharing or exchanging technologies, capital, products, and services without a unified ownership” (p. 30).

Surveying prior literature, Menard (2006) identifies several characteristics, or “regularities” in the research, which distinguish hybrid organization forms. First, there is the prevalence of *pooled resources*, suggesting that one reason hybrid forms develop is the inability of markets to bundle the required resources and capabilities and that integration would result in lost flexibility and weaker incentives. He concludes that a major problem for hybrids is to secure cooperation from external parties in order to coordinate activities without losing the advantages of decentralized decisions.

The second regularity identified is that of *relational contracting*, which governs transactions among partners who simultaneously participate in activities not related to the contracted relationship. The relational aspect is based on the advantages and risks which accrue to sharing among independent partners where contracts tend to be incomplete and therefore require other governance measures to adapt to changing circumstances, monitor activities, and resolve conflicts when they occur. The problem identified by Menard related to this regularity is how to secure effective relational contracts while minimizing the need for renegotiation.

The third characteristic is the complex role of *competition* in hybrid relationships, where partners are interdependent but simultaneously operate autonomously in pursuing their independent business activities. Therefore, partners may cooperate on some activities and compete on others, activities may overlap with partners competing for the same customers, and hybrid arrangements may compete with other organizational arrangements, including other hybrids. As a result, the problem becomes “what is the best stable mechanism for delineating joint decisions, disciplining partners, and solving conflicts while preventing free riding?” (Menard 2006, p. 31)

The information systems literature has also predicted the move away from traditional company hierarchies. Malone et. al. (1987) posit that the ability of IT to reduce transaction costs will result in an increasing shift in governance form away from vertical integration and towards markets in the future, meaning a greater degree of outsourcing. The authors claim that lower search costs would lead to a greater reliance on search, and the development of electronic markets. However, they also predicted the development of electronic hierarchies, with greater use of strong ties with a few long-term partners. Clemons et al. (1993) proposed the *move to the middle* hypothesis: “1. A greater degree of outsourcing will take place (a move away from ownership and vertical integration). 2. But the firm will rely on fewer suppliers than before, with whom the firm will have close and long-term relationships and with whom the firm will cooperate and coordinate closely (a move away from the market to intermediate governance structures when outsourcing)” (p. 13).

While many have followed Williamson’s lead and adopted the *hybrid* construct, there is a large base of literature which classifies these intermediate forms as *networks*. Thorelli (1986) proposed the network paradigm as a supplement to the theory of the firm, suggesting that networks lie between markets and hierarchies and that, in fact, many forms of organization which Williamson identified as markets are actually networks. Thorelli defines networks as “two or more organizations involved in long-term relationships” (p. 37), and suggested that this form of institutional arrangement adds three new elements to the existing “four p’s” of marketing strategy: power, influence, and trust.

Jarillo (1988) defines *strategic networks* as “long-term, purposeful arrangements among distinct but related for-profit organizations that allow those firms in them to gain or sustain competitive advantage vis-a-vis their competitors outside the network” (p. 32). While participating firms maintain some independence (otherwise they would qualify as Williamson’s conception of hierarchies), the relationships between participants are key to competitive positioning, and they require a hub firm which creates and maintains the network. While Thorelli observed



that many forms considered markets under Williamson are actually networks, Jarillo goes further to explain this distinction, claiming that strategic networks, unlike typical markets, show a high degree of perceived opportunities for value creation between the parties (p. 38).

Powell (1990) takes exception with Williamson's view of organizational forms as lying on a continuum with hybrid forms in the middle: "the familiar market-hierarchy continuum does not do justice to the notion of network forms of organization.... such an arrangement is neither a market transaction nor a hierarchical governance structure, but a separate, different mode of exchange, one with its own logic, a network" (pp. 296, 301).

Ebers (1999) defines inter-organizational co-operation between *more than two* firms as *inter-organizational networks*, which are classified by "recurring exchange relationships among a limited number of organizations that retain residual control of their individual resources yet periodically jointly decide over their use" (p. 3). The author highlights the long tradition of co-operative arrangements and emphasizes the acceleration in the number of inter-organizational alliances during the 1980's (see also Granovetter, 1994).

Klein and Poulymenakou (2006) note a blurring between the concepts of hierarchies, networks, and markets, and propose a characterization of networks based on actors, the linkages between the actors, and their environment. Considerations for actors include the number and type of firms involved, and their roles. Linkages include the type of relationship (formal contract or relational contract), governance structures based on power and social relationships, the types of resources exchanged (goods and services, knowledge, technology, etc.), shared values and trust, relationship history, etc. By environment, the authors refer to both the competitive environment of other networks or governance forms, the broader view of a business ecosystem, as well as social, political and legal environments. The authors conclude that inter-firm networks represent a distinct governance form governed by relational contracts which are underspecified, which makes them very

flexible but at the same time precarious (Das and Teng 2000). Further, networks are highly heterogeneous arrangements, incorporating a variety of member firms and adding another layer of heterogeneity and complexity from the network itself. (Klein and Poulymenakou 2006, pp. 7-8).

### *1.2.2 Motives for choosing hybrid/network organizational forms*

In the context of analyzing the application of transaction cost economics to predict the most appropriate organizational form, we should consider not merely the observed phenomenon of the proliferation of co-operative arrangements, but additionally the motives for firms' engaging in same. Citing prior literature, Ebers (1999) groups the primary motives for participating in inter-organizational co-operation into two broad categories: increasing revenue and reducing costs. Table 1.2 below summarizes Ebers' survey of prior literature on the topic. In one of the few empirical studies of the relative importance of motivational factors for inter-organizational networking, Glaister and Buckley (1996) identified five main factors. In diminishing order of significance, these are: technology development, market power, market development, resource, and large project size.

<b>Table 1.2: Motives for inter-organizational networking</b>	
Motives	Reference
Collude against common rivals or reduce competition	Porter and Fuller 1986
Access complementary resources and/or capabilities or closely co-ordinate use of resources to enhance competitiveness, for example, in terms of improved products, better market access, or faster market entry	Contractor and Lorange 1988; Harrigan 1985; Zajac and Olsen 1993
Create economies of scale and scope through joint research, marketing or production	Contractor and Lorange 1988, Håkansson and Snehota 1995
Reduce governance costs of coordinating activities between firms	Hennart 1991; Thorelli 1986
Gain access to knowledge that can neither be made available internally nor be easily transferred by licensing.	Badaracco 1991; Dyer 1996; Kreiner and Schultz 1993
Acquire and appropriate skills in a fast, effective, and efficient manner	Dodgson 1993
Spread financial or other risks, for example involving (mostly large) innovations or other risky projects	Contractor and Lorange 1988; Mariti and Smiley 1983
Six predictive contingencies: 1. Necessity, when organizations are mandated through law or regulation by higher authorities to establish relationships; 2. Asymmetry that allows one party to exercise power or control over another one or its resources; 3. Reciprocity, when through co-operation organizations can pursue common or mutually beneficial goals or interests; 4. Efficiency, when through co-operating organizations can achieve higher input/output ratios; 5. Stability, when through co-operation organizations can better forestall, forecast, or absorb uncertainty affecting their activities; and 6. Legitimacy, when through co-operation organizations can establish or enhance their reputation, image, prestige, or congruence with prevailing norms.	Oliver (1990)

Langlois and Robertson (1992) discuss modular systems, which they distinguish from prepackaged products or appliances. Through case studies, the authors demonstrate that there are both supply-side benefits (autonomous innovation due to division of labor, and rapid trial-and-error learning) and demand-side benefits (fine-tuning products to customer needs which allows for better coverage of the product space) to such systems. Through such modularization, “First, new products can satisfy a desire for attributes that has not been satisfied, or, perhaps, even noticed. Second, through technological convergence, new ways of packaging or bundling consumption technology, and therefore providing attributes, become feasible.” (p. 299).

While pursuing transaction cost economics and agency theory as the basis for our empirical analysis in chapter 2, we arrived at a point of impasse in the ability of these theories to explain some key phenomena from our observations. We therefore turned to the newer theories of ecosystems and platforms for the analysis of the business software domain in chapter 3. These theory bases complement TCE theory in that they focus on a particular type of hybrid/network governance form, which we found not adequately explained by the market/hierarchy/hybrid conceptualization of TCE. Further, while TCE tends to take a dyadic approach to transactions between two (or more) firms, ecosystem and platform theories take a more holistic view of the activity between multiple firms. The perspective in both cases is primarily from the perspective of the core firm, also known as the keystone firm in ecosystem theory, though in ecosystems and platforms the role of complementors or niche players is also deemed critical to the growth and overall health of the ecosystem. In addition, these theories focus on how to manage a platform/ecosystem in order to maximize value creation and appropriation, a concept which is not prevalent in TCE. In section 1.3 we review prior research on ecosystems, and in section 1.4 we discuss extant theory on platforms.

### 1.3 Ecosystems

Recent literature has used the concept of ecosystems to describe the complex interdependencies in various industry sectors. The use of this biological metaphor is an acknowledgement that no one firm can address every customer need, and that the health of each firm in a given sector is dependent on the overall health of the business ecosystem (Iansiti and Levien 2004, Iyer et al. 2006, Adner 2006).

There have been a variety of streams in the literature that inform the concept of the technology ecosystem. The key idea of this biological analogy is that for an ecosystem to remain healthy, participants must share value with the ecosystem; that is, give as much as they take (Iansiti and Levien 2004). This emphasis on sharing within the ecosystem immediately suggests an open strategy should be adopted, at least partially, by firms. One way in which those at the core of an ecosystem enable

participants to give back to the ecosystem is to open up parts of an otherwise proprietary or closed platform. Central, core participants in an ecosystem known as keystone players create value by developing “platforms” consisting of services, tools or technologies to foster innovation, growth and diversity (Iansiti and Levien 2004).

The idea of assuming a partially open or hybrid strategy is central to much of the literature on Open Innovation (Chesbrough 2003, Gassmann 2006). Successful executors of an open innovation strategy will offer incentives and tools for innovation outside the firm, combined with some mechanism for value appropriation from these creations. For example, West (2003) details hybrid strategies for the development of computing architectures. These include: a) opening parts, ceding control of commodity layers of the software in order to benefit from developments in open source communities, and b) partly open disclosing technology with restrictions.

Moore (1993) is credited with originating the concept of *business ecosystems*. According to the author, “in a business ecosystem, companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations” (p. 76). In this initial work, Moore claims that business ecosystems evolve through various stages, from birth to expansion, leadership, and self-renewal. Moore also identified the role of *central ecological contributors* with examples such as Intel, Microsoft and Wal-Mart, which he claimed “maintain the much-coveted chokehold within a business ecosystem” (p. 81).

Iansiti and Levien (2004a) identify three main strategies for ecosystem participants. In a physical dominator strategy the company “ultimately becomes its own ecosystem, absorbing the complex network of interdependencies that existed between distinct organizations, and is able to extract maximum short-term value from the assets it controls” (p. 74). In other words, dominators are more concerned with extracting value for themselves than with the health of other ecosystem participants, and may end up ultimately destroying the ecosystem.

In a niche strategy, the predominant strategy in an ecosystem, firms focus on a narrow business segment in order to differentiate themselves from competitors. Iansiti and Levien (2004a) emphasize the importance of diversity in an ecosystem, measured by the number of new niches created. They state “One way to assess niche creation is to look at the extent to which emerging technologies are actually being applied in the form of a variety of new businesses and products.” (p. 73). The authors further state “Effective niche players...create custom solutions by combining their specialized assets with complementary products and platforms provided by other niche players and keystones” (Iansiti and Levien 2004b, p. 134).

Keystone organizations, while representing a small percentage of the overall ecosystem, play a critical role, as “they aim to improve the overall health of their ecosystems by providing a stable and predictable set of common assets ... that other organizations use to build their own offerings” (Iansiti and Levien 2004a, p. 73). In contrast with the dominator strategy, keystones implement measures to share value with other ecosystem participants in a sustainable way, recognizing that the health of niche players is important to the success of the keystone. A significant contribution of the work of Iansiti and Levien is their explication of the role of the keystone in both creating value as well as sharing value with other ecosystem participants.

#### 1.4 Platforms

Keystones create value by creating and maintaining a *platform*, “an asset in the form of services, tools, or technologies that offer solutions to others in the ecosystem” (Iansiti and Levien 2004a, p. 74). The authors claim that keystones enable value creation in large networks by generating operating leverage, which they describe as “a series of assets that can be easily scaled and shared by a broad network of business partners” (2004b, p. 92)

Platforms are systems defined by markets with core components made by one company and complements made by a variety of companies. They have two primary characteristics: 1) they should perform an important function within a

'system of use' or solve an important technical problem within an industry; and (2) it should be easy to connect to or build upon the core solution in order to expand the system of use and allow new and even unintended end-uses. The core firm's product has important, but limited, value when used alone, but substantially increases in value when used with complements (Gawer and Cusumano, 2002, 2008).

Gawer and Cusumano (2008) distinguish between a product and an industry platform. They claim "a product is largely proprietary and under one company's control, whereas an industry platform is a foundation technology or service that is essential for a broader, interdependent ecosystem of businesses" (p. 28). The researchers further acknowledge that not every market need have a platform leader, but that several platform companies may exist simultaneously.

The tension between stability and evolvability is central to platforms. By making some components variable, platforms become adaptable to future technological developments, social or business trends, as well as uncertain or unanticipated environmental changes. Complementors, working on the periphery of the ecosystem, have the ability and mandate to respond to the needs of users with a level of speed or specialisation that would otherwise be prohibitively difficult for the core. Explicitly, they invoke the speed of market mechanisms, a Hayekian response to the here and now, yet simultaneously leverage the economic scale, benefits, and network externalities of a stable core infrastructure. This is particularly valuable when consumer patterns are heterogeneous, technologies are fragmented, and overall market trajectories are uncertain (Baldwin & Woodard, 2008; Boudreau & Hagiu, 2009). It is important to highlight that variability and creation are not limited to the periphery or complements of the platform. As Baldwin and Woodward (2008) highlight, core components of a system will also need to evolve over time, if for no other reason than to embrace basic technological advances in underlying technologies such as processing, storage, communication, and power consumption. Thus, in most cases, we will find evolvability at both the complement/application layer, and to a lesser degree, the core/infrastructure layer.

What remains stable through the evolution of the platform are the interfaces or thin crossing points (Baldwin, 2008) that govern interaction between the layers (Baldwin & Woodard, 2008). These architectural control points (Woodward, 2008) govern the relationships between the core and complements, creating bottlenecks where platform operators can, via property and other legal rights of exclusion, grant or deny outsiders access to the system (Boudreau & Hagiu, 2009; Jacobides, Knudsen, & Augier, 2006; Rochet & Tirole, 2003). Thus, the design of the interfaces is considered one of the most important levers for governing the platform.

Generativity refers to the ability of a self-contained system to create, generate, or produce a new output, structure, or behavior without any input from the originator of the system (Avital and Te'eni 2009, Tilson et al. 2010). While it is possible to cultivate generativity within the boundaries of a single firm, generative potential can be further realized in a looser system of heterogeneous actors who pursue self-interested, innovative activities in a distributed and scalable ecosystem (Busquets et al. 2009, Yoo et al. 2010).

IT enabled control processes have been used to coordinate and synchronize processes in a single network of firms. However, as distributed innovation happens in a larger ecosystem (basically a quasi-market of heterogeneous actors), governance infrastructures must be developed that embrace disparate motivations and fragmented knowledge; while simultaneously fostering the continuity and predictability that enforces appropriate quality standards and enables the emergence of collective benefits (Boudreau, 2011).

Incentive heterogeneity in platforms has been addressed by Boudreau and Lakhani (2009) who suggest two conceptual extremes: open innovation markets and open innovation communities. Innovation markets tend to be based upon profit seeking behavior, career advancement, or other extrinsic motivations; where innovation communities are based upon intrinsic rewards such as intellectual stimulation, sense of purpose and identity, and communal affiliation. As such, innovation markets will be governed by formal mechanisms such as explicit contracts



and licensing, where innovation communities will be governed by embedded social norms and intrinsic rewards. Most platforms or ecosystems contain instances of both market and communities in varying degrees, and governance mechanisms should successfully embrace a variety of motivations.

We have encountered significant prior research on issues of generativity for inter-firm activity, but have been less successful in discovering extant theory and empirical analysis of mechanisms for value appropriation and control. For example, Chesbrough and Appleyard (2007) delineate a variety of strategies that combine traditional strategy with open source business models and highlight the need to balance value creation with value capture. They state, *"If companies cannot find ways to profit from their innovation activities in open initiatives – through deployment, hybridization, complements, or self service, they cannot sustain their participation in those initiatives over time* (Chesbrough and Appleyard 2007 p. 69)." Where their offered typology of open business models goes far to address co-existence and creation, it is less explicit on how to achieve value appropriation, and omits any deeper discussion of governance and risk in open innovation processes. West and O'Mahoney (2008) discuss the tension between control and growth experienced by sponsors in sponsored source communities, concluding that the more control sponsors tried to exert over the direction of the community, the more they restricted the community's ability to grow. Their study highlights a need for a balanced equilibrium between innovation and control; the need to govern, but not over-tax the ecosystem.

Therefore, our research in chapters 3 and 4 is based upon several premises. First, we suggest that there is a fundamental tradeoff between creativity and control salient in technology platforms or ecosystems. Creativity without control can lead to excessive fragmentation and variable quality, which could create a negative overall perception of the ecosystem by contributors, users, and customers, could affect the ability of niche contributors to profitably develop their activities. In addition, there is the risk that unregulated third-party activity may take ecosystem development in directions inconsistent with the vision of the core sponsor. On the contrary,

excessive control or poorly designed control mechanisms can hurt creativity and innovation, also damaging the health and growth of the ecosystem. Second, we argue that research on governance and control mechanisms is less developed or mature than discourse on creativity phases, and therefore warrants attention in order to understand this critical interdependence between creativity and control. Finally, we contend that prior research has tended to view technology ecosystems as *homogeneous*, assuming that governance is uniform for all parties. We propose that there is a need for empirical research which adopts a more subtle view of technology ecosystem governance, acknowledging that participant roles vary, but more importantly, governance across the ecosystem must embrace heterogeneity, even for similar participant roles.

### 1.5 Summary of Subsequent Chapters

Empirical observations in this thesis are derived from the analysis of data in two distinct domains which fall into the broad categories of hybrid, or boundary-spanning, organizational forms, also called network forms in another stream of research (Jarillo 1988, Powell 1990, Thorelli 1986). The first domain includes firms involved in affiliate marketing programs in Spain; and second is the ecosystem revolving around a major business software company. Theoretical development begins with well-established standards in economics and management: agency theory and transaction cost analysis. The rest of the thesis draws from more recent literature on platforms and ecosystems. The work contained herein represents a journey to ground these observations in extant theory, and where conflicts emerged between the phenomena observed and existing theory, to seek new explanations through additional theories from other domains (marketing, information systems, biology, etc.), and to supplement this secondary research with original data and analysis.

While the thesis is designed with the intention that each chapter may stand on its own as a piece of academic work, they are all intended to pursue a common theme. Many companies realize that they may create more value by leveraging the

efforts of outside parties than by trying to conduct all of the business activities in the value chain internally. This is not inherently new; research on value chains, supply chains, and outsourcing, for example, have investigated this phenomenon. What we believe to be novel in recent studies is the emphasis on “opening” the channel to outside parties (open innovation is a diverse and growing field of study), and the idea of central, core participants known as keystones creating ecosystems revolving based on platforms consisting of services, tools or technologies to foster innovation, growth and diversity (Iansiti and Levien, 2004). While there is a burgeoning literature surrounding open innovation and ecosystems, we assert herein that there is a need for more studies which address the composition of these platforms, the mechanisms which enable value creation and sharing, and governance issues within the ecosystem. In our analysis, several issues have emerged which merit further investigation. These general questions have been converted to specific research questions, and analyzed using empirical data. The following is a summary of each chapter, including the research questions addressed, the analysis conducted, primary conclusions reached, and contributions to extant theory.

#### *1.5.1 Chapter 2: Governance mechanisms in affiliate marketing programs in Spain*

Chapter 2 is an exploratory analysis of governance mechanisms (formal contracts, partner selection, incentives and monitoring) in one-to-many affiliate programs in Spain. Internet-based affiliate marketing programs have emerged as one of the fastest-growing methods for online retailers to acquire customers and increase sales by tapping into the power of independent web sites to reach a large, diverse audience of potential customers (Hoffman and Novak 2000). This researcher first became interested in affiliate marketing as a way to rapidly create and monetize new Internet businesses, since it offers both content and a way to extract value from that content through various potential business models. However, a strong incompatibility quickly emerged between the way programs were supposed to work in theory, and what we observed in reality. Affiliates are contracted to represent the sales and marketing efforts of merchants, and there appeared to be effective

mechanisms in place to measure the results of affiliates' efforts in terms of generating clicks (visits to the merchant web site), sales, or leads (visitors fill out a form). The distributed nature of the activity seemed to make it difficult, though, for merchants to observe the behavior of affiliates in generating these results. So the question arose as to how merchants ensure that affiliates, while representing the interests of the merchant, do not engage in fraudulent or otherwise negative behavior which could be associated with the brand of the merchant? Since this appeared to be a classic principal-agent conflict, we turned to transaction cost and agency theories as a lens through which we might view the phenomenon. We therefore address the following research question:

**RQ 2.1** How are governance mechanisms used by merchants in one-to-many, Internet-based affiliate marketing programs in Spain to control the activities of their affiliates?

To analyze this research question we collected qualitative and quantitative data on four governance mechanisms identified as relevant from the literature (formal contracts, partner selection, incentives and monitoring). The conclusion is that there is a significant lack of transparency in the guidance and restrictions communicated to affiliates, and a lack of systematic monitoring of affiliate behavior, which increases the risk of opportunism or misconduct. And while a small number of affiliates are responsible for the main positive outcomes and therefore maintain a close relationship with merchants, there are thousands of affiliates who can produce negative outcomes for the merchant by committing fraud or otherwise damaging their brand reputation. General recommendations for managers of affiliate programs are considered.

While we believe this analysis has generated interesting and valuable results, and we hope to have made an addition to the transaction cost and agency theory bases, it seemed to some degree unsatisfactory both from a theoretical perspective, as well as considering the needs of merchants and affiliates. On the theory side, we choose certain governance mechanisms through which to view the domain with a

qualitative analysis, but the choice felt somewhat incomplete, as these clearly represented a limited selection of governance mechanisms and not all potential strategies. We offer some prescriptive conclusions for merchants, but the issue remained as to how merchants could most effectively organize the channel to encourage participation and innovation on the part of the affiliates, while participating in value creation and retaining a degree of control. Therefore, for the analysis of the second domain in the thesis, we turned to theory on ecosystems and platforms for a more holistic view of the tensions between creation and control.

### *1.5.2 Chapter 3: Control in technology ecosystems*

Chapter 3 uses an inductive process to formulate a model of value appropriation in hybrid technology ecosystems characterized by tension between creative activities fostered on the periphery and control processes orchestrated by the core. Our data come from a study of a business software ecosystem consisting of a major, multinational software manufacturer at the core and a system of independent implementation partners and solution developers on the periphery. In this analysis, we address the following research questions:

**RQ 3.1** What are the primary platform mechanisms required for the coordination and control of technology ecosystems?

**RQ 3.2** How do platform mechanisms interact to foster creativity and innovation, and ensure value appropriation and control in technology ecosystems?

**RQ 3.3** How do incentive and control mechanisms accommodate ecosystem heterogeneity?

In our analysis, we expand on several themes related to the tension between creation and control. Innovation on the periphery is fostered through: a) incentives to create, and b) infrastructure to create; where control is facilitated through: c) incentives to control, and d) infrastructure to control. As the levels of creation and control are both functions of self-selection by non-core participants, the underlying

architecture of the ecosystem must balance infrastructures of creation and control with the appropriate incentives for creation and control. Control processes must impart value to the creative process to be sustainable. The research is novel in that it describes the mechanisms of value appropriation in hybrid ecosystems previously underserved in the literature of open source, open innovation, toolkits and technology ecosystems.

### *1.5.3 Chapter 4: Rationalization of empirical analysis and theory development*

In Chapter 4 we rationalize the two primary empirical sections of this thesis: a more “traditional” analysis employing elements of transaction cost analysis and agency theory to a novel, fragmented ecosystem with no clear platform leaders; and a more exploratory effort to build theory based primarily on the emergent ecosystem and platform theory bases, where the target ecosystem is based around a single platform with a large, profit-seeking company at its core. In order to accomplish this task, we proposed the following research questions:

**RQ 4.1:** What aspects of ecosystems/platforms as a new organizational form are explained by transaction cost economics and agency theory?

**RQ 4.2:** What additional explanatory value is provided by platform/ecosystem theory?

**RQ 4.3:** What additional conceptual development is needed?

We begin to address these research questions through a detailed qualitative analysis of each of our two domains along the primary dimensions of transaction cost economics: asset specificity, transaction frequency, environmental uncertainty, and behavioral uncertainty. Based on our analysis, we conclude that TCE is generally effective in its explanatory value for analyzing the most effective governance form for a dyadic relationship, including hold-up costs and partner lock-in, the completeness of contracts, and issues related to the monitoring of exchange behavior.

However, we find several areas where the ecosystems and platforms literature may complement TCE. These include the focus on a complex network of relationships as opposed to a dyadic relationship focus; the importance of innovation, and the tension between encouraging creation while retaining a degree of control; issues related to mechanisms for value appropriation by the core firm; the importance of tools for encouraging innovation by third parties; the graduation and self-selection of control mechanisms; the treatment of heterogeneity and variability; the transfer of legitimacy and status; and the co-existence and interaction of market and community mechanisms.

## **2 GOVERNANCE MECHANISMS IN INTERNET-BASED AFFILIATE MARKETING PROGRAMS IN SPAIN**

\* An earlier version of this chapter was presented at the 20th Bled eConference (June, 2007), and the final manuscript of this chapter has been published in the International Journal of Ebusiness Research (Fox and Wareham, 2010).

### **2.1 Introduction:**

Revenue-sharing affiliate marketing is potentially the most cost-effective method for acquiring new customers on the Internet. Also called pay for performance marketing, an affiliate marketing program consists of an on-line retailer (merchant) who places a link on a third-party website (affiliate). If a visitor to the affiliate site clicks on the link and performs a specified action (e.g. visits the merchant's website, fills out a form, or purchases a product), the affiliate receives a commission. The arrangement has been described as similar to having a large, independent sales force working solely for commission and absorbing the total risk associated with marketing a retailer's products (Duffy, 2005).

While Amazon is generally credited with creating the first major affiliate program on the Internet (launched in 1996), Hoffman and Novak first focused the attention of the academic community on this strategy in 2000, concluding that of the various forms of advertising used by online retailer CDnow, their affiliate program was by far the most cost effective (after word-of-mouth, to which they attributed a cost of zero), since it allowed the retailer to "draw a direct line from advertisement to sale" (p. 188, Hoffman and Novak 2000).

Hoffman and Novak are not the only researchers who have taken an interest in affiliate marketing. Papatla and Bhatnagar (2002) propose a guide to choosing affiliate partners, while Libai *et al.* (2003) perform a theoretical analysis of affiliate



referral fee structures in order to determine the optimal program for different types of affiliates. Other research includes case studies of merchants (e.g. Walthieu, 2000) as well as affiliates (e.g. Moon, 2000).

Despite these initial efforts to bring the topic of affiliate marketing to the fore, recent empirical studies have been few and far between. This might lead one to the conclusion that affiliate marketing was merely a fad which was popular for a time, but has since faded into obscurity. This is not the case. Duffy (2005) recently observed that “affiliate marketing is likely to become the principal mainstream marketing strategy for e-commerce businesses in the future” (p. 161). It is difficult, however, to find exact estimates of market size, as affiliate marketing has yet to be clearly defined, and the entrance of dozens of intermediaries further complicates the situation (Molander, 2005). While ValueClick (2006) estimates the global affiliate marketing sector to be in the range of \$400 - \$500 million, MarketingSherpa places the figure at \$6.5 billion (MarketingSherpa, 2006a). Today, 9-40% of a typical online retailer’s sales come from affiliates (MarketingSherpa, 2006b).

In light of the growing practical importance of affiliate marketing, there are critical issues which have not received sufficient attention by researchers thus far. An area of particular interest, and the topic of this chapter, is the governance mechanisms used in affiliate programs to control the promotional activities of affiliates. One of the principal advantages of affiliate marketing is its ability to accurately track the behavior of visitors in terms of website visits, lead generation and sales. However, there is a significant risk that while promoting merchants’ products and services, affiliates may engage in activities that are fraudulent, unethical, or somehow destructive to the brand value of the merchant. As affiliates are often the first point of contact with a potential customer, negatively-perceived activities on their part could have a disastrous effect on the retailer’s business.

The need for further investigation in the area of governance of affiliate marketing programs is corroborated by a recent survey from AffStat (2006), in which nearly 200 affiliate managers were asked their biggest challenge in affiliate

marketing. About half indicated some form of governance issue (detecting fraud, properly managing the affiliates, monitoring affiliates for brand risks and monitoring affiliates' use of trademarks in search engines).

Transaction cost analysis (Coase, 1937; Williamson, 1975, 1985, 1991) and agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976; Ross, 1973) provide the theoretical background for the constructs used in this study. Opportunism has appeared in the literature in many different forms (see Wathne and Heide, 2000 for a detailed treatment of the construct), but can be generally described as “some form of cheating or undersupply relative to an implicit or explicit contract” (p. 48, Wathne and Heide, 2000). In the TCA and Agency theory literature, the primary relationship considered is that between a principal and an agent, which in affiliate marketing would be the merchant and its affiliate. However, in the context of affiliate marketing (and in marketing relationships in general), the most important relationship is that between the merchant and the end customer. Therefore, opportunism in this case would include any action on the part of the affiliate which could damage the reputation of the merchant in the eyes of its customers (or potential customers).

The means of limiting channel member opportunism in transaction cost analysis is through the use of governance, and several *mechanisms* are available for managing partner opportunism (Heide, 1994). The authors have identified the following as the most relevant in the affiliate marketing channel: the formal contract, partner selection, incentives, and monitoring. All four governance mechanisms are reviewed in greater detail in the Research Background section.

This chapter explores the following research question:

**RQ 2.1:** How are governance mechanisms used by merchants in one-to-many, Internet-based affiliate marketing programs in Spain to control the activities of their affiliates?

This is accomplished by combining theoretical analysis with empirical evidence obtained in two phases: first, data was collected from a total of 136 affiliate

programs managed by three of the largest affiliate networks in Spain at the time the study was conducted; next, semi-structured interviews were conducted with 11 professionals representing the various roles in the affiliate marketing channel: merchants, advertising agencies, and affiliate networks.

The remainder of this chapter is structured as follows. In the following section, background theory is reviewed on types of affiliate programs, the affiliate marketing channel structure, commission pricing, and transaction cost analysis and agency theory applied to the affiliate marketing context. We continue with Data Collection and Analysis, where the research method is described and a summary of the data is provided. The Results section details the findings for each of the four governance mechanisms. Finally, the Discussion section summarizes the findings and describes implications for the management of affiliate programs and is followed by Conclusions.

## 2.2 Research background

### 2.2.1 *Affiliate Marketing*

Amazon.com is widely credited with creating the first affiliate program on the Internet in 1996 (Dysart, 2002; Libai *et al.*, 2003). Since then, Amazon has gone on to develop one of the largest and most successful affiliate programs in the world. According to their website, they currently have over 1,000,000 members worldwide. Many others have followed Amazon's example, making affiliate marketing an important source of customer acquisition (Hoffman and Novak, 2000; Libai *et al.*, 2003).

The benefits from these programs in terms of increased visitor traffic and sales can be significant. However, there are additional risks for retailers when they entrust their marketing efforts to affiliates. According to a recent survey of affiliate managers (merchants) by AffStat (2006), when asked their biggest challenge in

affiliate marketing, a high percentage of the responses were related to governance issues<sup>1</sup>:

Table 2.1: Challenges in Affiliate Marketing		
Risk	Relationship Structure	
	Pay per Sale	Pay per Lead
Detecting Fraud	14%	24%
Properly managing the affiliates	18%	22%
Monitoring affiliates for brand risks	6%	4%
Monitoring affiliate use of trademarks in search engines	8%	2%
Total	46%	52%

The following sections provide further background on the types of affiliate programs in use, the affiliate marketing channel structure and affiliate commission pricing, as well as a discussion of agency theory and transaction cost analysis as applied to governance mechanisms in the affiliate marketing context.

### 2.2.2 Types of Affiliate Programs

Libai *et al.* (2003) describe two types of affiliate programs, one-to-one and one-to-many. In a one-to-one program, the merchant and affiliate negotiate a unique contract which specifies the terms and conditions of the arrangement. In this case, the affiliate site has significant negotiating power with the merchant. The fee arrangement is often long-term and often involves up-front payment of all or a portion of the commissions.

In contrast, Amazon.com has an “open” program, where affiliates link to the Amazon.com site and earn up to an 8.5% referral fee when visitors who click on the links make a purchase. This is an example of a one-to-many program, in which the merchant (Amazon in this case) makes the program available to numerous affiliates and establishes the terms of the agreement including pricing, advertising formats

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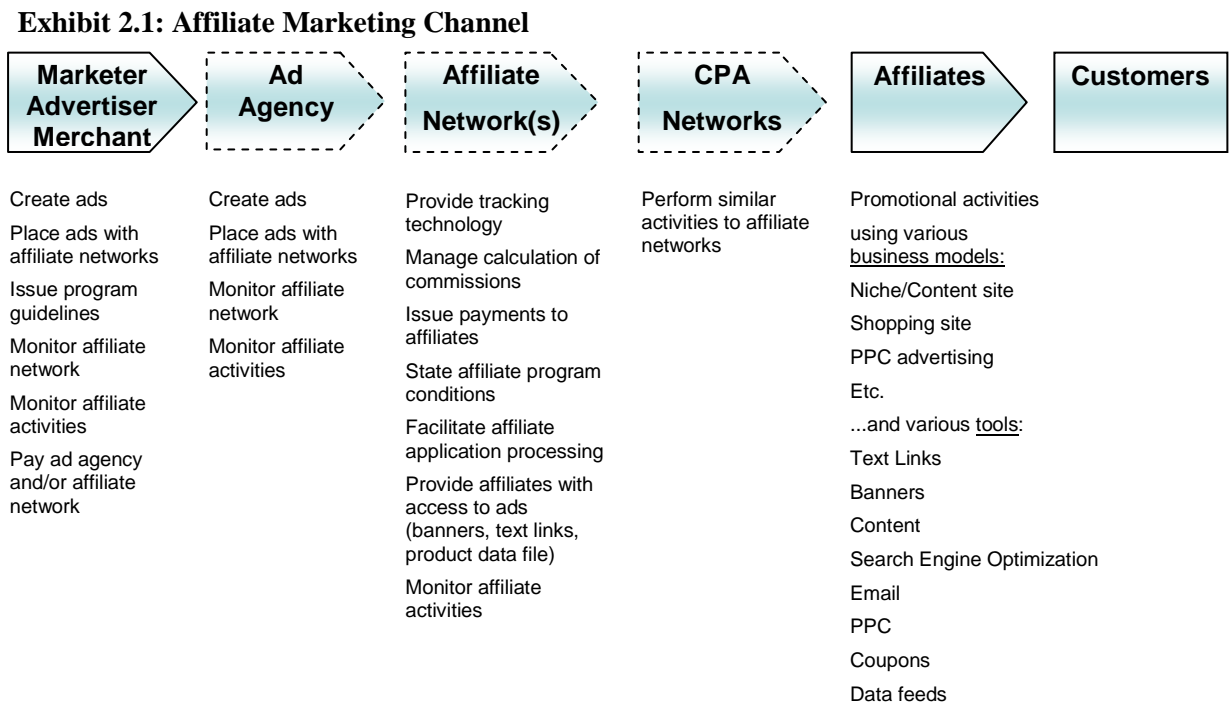
<sup>1</sup> The results of the survey are divided by the type of pricing scheme offering. In Pay per Sale programs, the affiliate receives a commission when the customer referred to the merchant site makes a purchase. In Pay per Lead programs, the affiliate receives a commission for each unique visitor sent.

available, and acceptable practices. Affiliates simply decide whether or not to apply to the program. Once the affiliates sign up for the program, the merchant has considerable power in the relationship, and may change the terms of the agreement or cancel the agreement at any time.

One-to-one programs by their very nature are easier for merchants to control: there are fewer affiliates, and the relationship is more direct. However, one-to-many programs are much more difficult, as merchants must keep track of the performance of potentially thousands of affiliates, and often use one or more intermediaries to do so. Due to the acute nature of the governance issues in one-to-many programs as compared to one-to-one, the remainder of this research will focus on one-to-many affiliate programs.

### 2.2.3 Affiliate Marketing Channel Structure

The affiliate marketing channel structure is summarized in Exhibit 1 below:



A company can either manage their affiliate program themselves, or use one of the many affiliate marketing networks who perform this function. Proponents of in-house programs claim that they are only cost-effective once they reach a certain size (Ray, 2001, p.30). Therefore, the vast majority of merchants use one or more affiliate networks to manage their affiliate programs.

The focus of this research is on affiliate programs which use one or more affiliate networks as intermediaries. The proposition is that this indirect relationship between the merchant and the affiliates increases the importance of governance mechanisms. As the affiliate marketing channel gets longer (with additional intermediaries between the advertiser and the consumer) and wider (with additional affiliates added to the channel), governance of the activities of affiliates logically becomes more difficult.

#### *2.2.4 Affiliate Business Models*

Affiliates engage in various types of business activities, where affiliate marketing can represent anything from a small source of extra income to the core activity of the business. In a recent survey by PartnerCentric (2006) of 1,041 affiliates, the majority of respondents identified themselves as niche/content sites (44.5%), coupon/discount shopping sites (26.9%) and PPC advertisers (17.5%). The remaining 11.1% included sweepstakes/contest sites, shopping malls, incentive/loyalty sites, personal websites and blog/ezine.

The business models used by affiliates have governance implications, particularly in the areas of partner selection and monitoring. For example, it may be more difficult to monitor an affiliate who promotes merchants using search engine marketing, but does not have a web page.

Affiliates also vary significantly in the size of their operations and contribution to an advertiser's program, but the general rule is that the vast majority of visitors and sales come from a small number of affiliates. Some have claimed that 20% of

affiliates account for 80% of transactions (Fox, 2000), while others believe that as much as 95% of sales come from 5% of the affiliates (Ray, 2001).

### 2.2.5 Affiliate Promotion Tools

In terms of the tools used to promote affiliate programs, the leading responses in the Partnercentric (2006) survey include:

Promotion Tool	Percentage
Text links	19.88%
Banners	18.80%
Content	18.40%
Search engine optimization	11.51%
Email	9.42%
PPC	7.51%
Coupons	6.83%
Data feeds	4.09%

Much of the governance challenge in affiliate marketing is due to the degree to which affiliates can customize the merchant's message. Therefore, those tools where the affiliate has a significant degree of autonomy in deciding how to represent a merchant tend to add to the monitoring challenge.

Email is one tool which is popular for affiliates since it allows them to send targeted advertising to customers at a low cost. However, from a customer perspective, the problem of spam looms large. Consumer concerns regarding spam include "privacy, false email identities, questionable email content, enticement and fraud", and in 2002 the European Parliament dictated that users must opt-in (give prior consent) to receive UCE (unsolicited commercial email) (Sipior *et al.*, 2004).

One common strategy used by merchants is to forbid the use of their trademarks in the search engine marketing activities of affiliates. Another approach is to prevent affiliates from using the merchant trademark in the text of advertisements written and placed in search engines. The efficacy of these measures is far from clear, however. While there is a risk of cannibalizing sales from the merchants' other marketing efforts, many have suggested allowing affiliates to bid

on trademarks improves reach, effectively “filling the channel” by showing multiple ads to search engine users, which ultimately should result in more sales for the advertiser (Internet Retailer, 2004; Stein, 2004).

### 2.2.6 Commission Pricing

The Internet as a marketing channel has the unique ability to not only track the amount of advertising delivered, but the amount consumed as well (Hoffman and Novak, 2000). Through the use of a cookie placed on a visitor’s computer when they click on an ad, it is possible to track which site the visitor came from (including any affiliate programs associated with the ad) as well as their behavior on the merchant site, up to and including events such as a registration or a purchase, even if that event happens 30-45 days (or in some cases a year, depending on the configuration of the cookie) later. This ability to track visitor behavior has given rise to additional pricing models which emphasize pay-per-performance (PPP), commonly known as cost-per-action or cost-per-acquisition (CPA).

The choice of pricing model has important implications for governance. See Table 2.3 below for a brief description.

<b>Table 2.3: Affiliate commission pricing models</b>	
Pricing Model	Description
CPC (Cost-per-Click)	A commission is paid for each unique visitor referred to the merchant site.
CPS (Cost-per-Sale)	A commission is only paid when a visitor makes a purchase.
CPL (Cost-per-Lead)	A commission is only paid when a visitor fills out a form.
Hybrid	A commission is paid for each unique visitor, and an additional commission is paid per sale or lead

### 2.2.7 Governance Mechanisms: Agency Theory and Transaction Cost Analysis Theory

Agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976; Ross, 1973) addresses the agency relationship in which a principal delegates work to an agent



who then performs the work. The two parties are engaged in cooperative behavior, but have different goals and different attitudes towards risk. Agency theory describes this relationship using the metaphor of a contract, and attempts to resolve two problems: a) the desires or goals of the principal and agent conflict; and b) it is difficult or expensive for the principal to verify the agent's activities (Eisenhardt, 1989). The problems in developing effective contracts are a result of certain human assumptions (self-interest, bounded rationality and risk aversion) and information asymmetry between the two parties, which give rise to the risks of moral hazard and adverse selection.

Information asymmetry in the case of affiliate marketing occurs due to the fact that one-to-many affiliate marketing programs have potentially thousands of affiliates who are given a significant degree of autonomy as to how they represent the merchants' products and services. Many of these activities are not easily observed due to the highly distributed nature of the Internet. This information asymmetry is exacerbated by the presence of affiliate networks acting as intermediaries, which distances the merchant even further from the activities of its affiliates.

The primary limitation of agency theory is that it focuses exclusively on the formal contract as the unit of analysis. Transaction cost analysis may be a useful tool to extend the analysis to a broader understanding of governance in the merchant-affiliate relationship. Transaction cost analysis (TCA), (Coase, 1937; Williamson, 1975, 1985), has been used extensively in marketing to analyze interfirm relationships (e.g. Anderson and Weitz, 1992; Brown *et al.*, 2000; Dahlstrom *et al.*, 1996; Rindfleisch and Heide, 1997). Brown *et al.* (2000) claim that the normative goal of the theory is to minimize the costs of exchange, and that one way to accomplish that objective is to minimize the impact of opportunism on channel members.

The means of limiting channel member opportunism in transaction cost analysis is through the use of governance, which may be broadly defined as "a

multidimensional phenomenon, encompassing the initiation, termination and ongoing relationship maintenance between a set of parties” (Heide, 1994, p. 72).

Several *mechanisms* are available for managing partner opportunism. The model provided by Wathne and Heide (2000, p. 44) is used as the basis for the governance mechanisms employed in this research, along with the formal contract as used in agency theory. The governance mechanisms identified as relevant to affiliate marketing include: the formal contract, partner selection, incentives and monitoring.

#### 2.2.7.1 Governance Mechanisms: Formal Contract

Agency theory describes two basic forms of contracts, outcome-based and behavior-based. The assertion is that outcome-based contracts “coalign the preferences of agents with those of the principal because the rewards for both depend on the same actions and, therefore, the conflicts of self-interest between principal and agent are reduced” (Eisenhardt, 1989, p. 60). Behavior-based contracts, on the other hand, work best in situations where information systems are capable of measuring the agent’s behavior, where outcomes are not easily measurable, where agents are risk averse, where the tasks to be performed by the agent are easily programmed in advance, and where the relationship is long-term (Eisenhardt, 1989).

It follows, therefore, that in one-to-many affiliate marketing programs the contracts would tend to be outcome-based. In fact, this is practically the definition of pay-per-action commission pricing. However, it may also be possible to have a hybrid policy towards control, where a mix of outcome-based and behavior-based strategies are used (Oliver and Anderson, 1995). This hybrid model appears to be what is required in affiliate marketing. While the incentives may be outcome-based, many of the conditions stipulated in the contracts between the affiliate network and affiliate address the behavior that the affiliate may or may not engage in while promoting the merchant’s products and services. In other words, the contract

stipulates not just the outcomes expected from the affiliate, but the expected behavior as well. This will have important implications for monitoring.

#### 2.2.7.2 Governance Mechanisms: Partner Selection

One method for addressing the problem of opportunism, specifically regarding adverse selection, or “the risk of being locked-in with a supplier who lacks the needed skills” is to “select exchange partners a priori that are not opportunistically inclined or are inherently cooperative with respect to a particular task” (Stump and Heide, 1996, p. 432).

Papatla and Bhatnagar (2002) addressed partner selection in affiliate marketing by proposing guidelines for how to choose affiliate partners, concluding that affiliate partnerships should be established between businesses with related products including: substitutes, strict complements, episodic substitutes and episodic compliments.

In this study, we analyze this governance mechanism through a combination of the criteria for selection set forth in the formal contracts, as well as interviews with professionals involved in affiliate marketing.

#### 2.2.7.3 Governance Mechanisms: Incentives

The primary benefit of well-structured incentives is a situation where the long-term gains from cooperative behavior exceed the short-term payoffs from opportunism (Wathne and Heide, 2000). An effective incentive structure has also been called a self-enforcing agreement, which “remains in force as long as each party believes himself to be better off by continuing the agreement than he would be by ending it” (Telser, 1980, p. 27).

The main incentives in affiliate marketing programs are outcome-based commissions based on the number of visitors sent to a merchant site, and the

conversion of these visits into sales or registrations (see Table 3 for a list of the pricing models in use). The type of incentive used has important implications for partner selection, for monitoring, and for evaluating the success of the program.

In this study, incentives are explored through a categorization of the base commissions included in the affiliate contracts, combined with qualitative data from interviews with professionals involved in affiliate marketing.

#### 2.2.7.4 Governance Mechanisms: Monitoring

Monitoring may be defined as “an effort made by one party to measure or “meter” the performance of another” (Heide et al., 2007, p. 426). Monitoring serves to reduce information asymmetry between the two parties, and thereby to reduce opportunism. Agency theory uses the term *information systems* for the same activity. In the case of affiliate marketing, affiliate networks gather real-time statistics on visitors, registrations and sales in the various affiliate marketing programs. In other words, the outcomes of affiliate activities are tracked regularly. However, it is not readily apparent which strategies are used to monitor the affiliate activities in order to ensure they comply with the behavioral restrictions included in the contract.

In this study, monitoring is analyzed through data gathered from the affiliate program guidelines (formal contracts), combined with interviews with professionals associated with affiliate marketing.

### 2.3 Data Collection and analysis

Spain was chosen as the location of the study for two main reasons: 1) it is small enough for the sample to encompass a substantial portion of the affiliate programs in the country; and 2) It contains a much higher proportion of programs with cost per click pricing (as opposed to cost per action) than countries such as the

U.S. or the U.K., and therefore has a higher potential for opportunistic behavior on the part of affiliates.

This study explores the first governance mechanism, the formal contract, by reviewing the restrictions placed on affiliate behavior in three areas: a) the program guidelines communicated to affiliates when they are accepted into a program; b) restrictions stipulated in the contract between the affiliate and the affiliate network; and c) restrictions from other intermediaries such as search engines.

Data was collected from a total of 136 programs managed by three of the largest affiliate networks in Spain at the time the study was conducted: Tradedoubler (56 advertisers), Zanox (75 advertisers) and OMG (5 advertisers). These include all of the programs in the three affiliate networks and, as such, represent a significant portion of the overall population in Spain. Not included are programs run on other affiliate networks, or programs run directly by a merchant without using an intermediary. While it is difficult to gauge the total population of affiliate programs in Spain due to a lack of an authoritative list of all programs, the authors estimate that this sample represents upwards of 75% of the population at the time the sample was taken, and perhaps as much as 90%.

Background information was collected from the guidelines for each program including: name of affiliate network, program name and category of business activity. Next, affiliate restrictions were gathered from the program guidelines. The results are summarized below:

<b>Table 2.4: Research Results</b>		
Question	Number of Affirmative Responses	Percentage of Total
Are there restrictions on the use of the company trademark in the affiliate's URL?	5.00	3.68%
Is search engine marketing prohibited?	20.00	14.71%
Is the affiliate restricted from using the merchant's trademark(s) in advertising copy?	22.00	18.97%*
Is the affiliate restricted from bidding on the merchant's trademark(s)?	34.00	29.31%*
Is the affiliate restricted from bidding on the misspellings of the merchant's trademark?	8.00	6.90%*
Is the affiliate restricted from bidding on the trademarks of the merchant's competitors?	13.00	11.21%*
Is there a restriction on the amount that the affiliate can bid on the merchant's trademark(s)?	1.00	0.86%*
Are visitors from the affiliate site sent to a special URL separate from the merchant's home page?	6.00	5.17%*
Are there restrictions on email marketing?	3.00	2.21%
Are there restrictions related to privacy policies?	2.00	1.47%
Partner Selection: Are there restrictions on the types of affiliates accepted in the program (restrictions on affiliate website content)?	18.00	13.24%

N=136, or \* N=116 percentage of total programs which allow search engine marketing

The remaining constructs (partner selection, incentives and monitoring) are analyzed based on a combination of the program data described above, as well as data gathered in semi-formal interviews conducted with professionals in the various roles in the affiliate marketing channel. 11 interviews were conducted in 2007. Please see Table 2.5 for an overview of the interviewees.

<b>Table 2.5: Interviewee profiles</b>		
	Title	Organization
1	Online Marketing Manager	Large Online Travel Agency
2	Online Advertising and Internet Manager	Online Financial Services Company
3	Online Manager	Internet Dating Site
4	Online Marketing Manager	Hotel Reservation Site
5	Marketing Manager	Event Ticket Sales Online
6	Managing Director	Interactive Marketing Agency
7	Account Director / Consultant	Affiliate Network
8	Account Manager	Affiliate Network
9	Affiliate Manager	Affiliate Network
10	Chief Marketing Director	Large Online Travel Agency
11	Head of Affiliates	Large International Online Travel Agency

The process for data collection and analysis began with an initial review of the general contracts from each of the three large affiliate networks in Spain (Tradedoubler, Zanox, and OMG). In this analysis we found general language prohibiting things such as illegal activities, negative messages and promotion of violence, spam through e-mail, forced clicks, and violation of copyrights and trademarks. Next, we analyzed the contract provisions for each of the 136 programs in our sample. Here we surfaced additional, more specific restrictions related to the use of the merchants' brands in search engine advertising and on the affiliate web sites, and restrictions related to the use of email marketing. Since our findings from this initial analysis were limited, we returned to the literature on transaction cost economics and governance mechanisms, and identified 3 additional governance mechanisms to add to formal contracts (partner selection, incentives, and monitoring). At this point we scheduled our initial semi-structured interviews. We took detailed notes for each interview, recording the interactions when possible, and highlighted positive practices as well as sources of conflict. We used a snowball

sampling approach, asking each interviewee for additional potential respondents at the end of the interview. The results of these efforts are analyzed below.

## 2.4 Results

### 2.4.1 Formal Contracts

The first question is whether there are restrictions against an affiliate's using the merchant's trademark in the affiliate website URL (Uniform Resource Locator, or the Internet address of the affiliate site). While only 3.68% of the merchants expressly forbid this activity, the affiliate network Zanox forbids "the use of domain names registered with copyrights". Tradedoubler states in their affiliate contract that "the affiliate also guarantees that the information and the productions on his website do not infringe the rights of any third party, including intellectual property rights, and that the information and the productions are not offensive, forbidden or objectionable for any reason. *In case of doubt, Tradedoubler reserves the right to finalize its business relationship with the Affiliate (author's italics)*" (Tradedoubler, 2007). OMG makes similar broad statements regarding intellectual property infringements.

The area for which there are the most restrictions placed on affiliate behavior in the formal contracts is in the use of search engine marketing. This is an area where affiliates typically have a great deal of independence, since they write their own ad copy and choose which keywords to bid on. Over 85% of the programs in the study allow search engine marketing in some form. Of these programs, 29.3% prohibit bidding on their trademark(s) in sponsored search and 6.9% forbid bidding on competitors' trademarks. One of the programs reviewed in the current study allows bidding on their trademarks, but limits the maximum amount of the bid. Presumably this is to prevent affiliates from outbidding the ads placed by the merchant directly.



19% of merchants prohibit affiliates from using merchant trademark(s) in the advertising copy used in search engine marketing. This low percentage is somewhat difficult to interpret, however. Search engine policies typically limit third parties' use of trademarks in advertising copy. Merchants may rely on these search engine restrictions rather than making them explicit in the affiliate program guidelines.

An additional control measure is preventing affiliates from sending visitors directly to the merchant's homepage, using instead a special website set up for affiliates. This was the case in 5.17% of the programs.

Email and privacy policies are two related areas. There are three main issues here: whether affiliates clearly communicate their privacy policies to visitors; whether affiliates only send email to individuals who have previously opted-in; and whether merchants restrict and/or monitor the messages communicated via email regarding their products and services. In the affiliate programs we reviewed, a mere 2.2% of merchants (3 programs total) address email marketing in some way. Of these 3 programs, one prohibits its use, and two require visitors to opt-in, or agree to receive promotional email. A mere 1.5% require affiliates to communicate their privacy policies to visitors. These areas, however, are also covered under European Union and Spanish law, which require prior opt-in for unsolicited commercial email (Sipior *et al.*, 2004). In addition, the program guidelines for Zanox expressly forbid spam, which they define as unsolicited email without prior opt-in. However, by not explicitly stating these restrictions in their own program guidelines, merchants may be leaving themselves open for problems later.

More importantly, there are no specific guidelines as to the *content* of the email advertisements. This is surprising, as it leaves the affiliates free to represent the merchants' products and services however they see fit. Furthermore, while merchants can visit affiliate websites in order to monitor the content, it is more difficult to monitor the content of emails sent which contain merchant-related content. One way that many merchants try to address this is by providing pre-approved content for email marketing which the affiliate can paste directly in emails

sent to their customers. While this does not address the spam issue, it does help ensure a consistent advertising message on the part of the merchant.

#### *2.4.2 Partner Selection*

Only 13.24% of the programs explicitly state restrictions on the types of affiliates who may or may not apply to their program. These restrictions generally include some combination of nudity, sexual material, child pornography, firearms, drug consumption, gambling, illegal activity or violence. The remaining 86.76% make no mention whatsoever of the types of affiliate businesses which are acceptable. A well-known credit card provider had the most stringent policy regarding affiliate website content, adding restrictions against sites with religious material and sites whose content is poorly designed or of poor quality. However, this was the only program which referred to either the design of the site or its quality.

Nevertheless, this data must be evaluated in the context of the general affiliate contracts in the various affiliate networks. Tradedoubler restricts affiliates from placing merchant advertising alongside material which is “pornographic, discriminatory by race, religion or sex, or which infringes the rights of third parties in any way” (Tradedoubler, 2006). OMG’s contract states “the Affiliate website does not and shall not display or contain any information or materials or hyper text links to information or materials which are or may be objectively considered to be defamatory, obscene, pornographic, offensive, threatening, blasphemous or liable to incite racial hatred or which promote any illegal activity including (but not limited to) cracking or hacking” (OMG Affiliate Contract, 2007).

While the above restrictions address affiliates who publish illegal or offensive content, they do not consider the types of business models used by affiliates. Furthermore, other criteria used to evaluate affiliate applications based on, for example, their offering related products (Papatla and Bhatnagar, 2002) are not addressed by affiliate program guidelines. Therefore, while merchants may have

established internal guidelines in this regard, these are not communicated to the affiliates.

In the interviews, while most merchants mentioned that they pay attention to the business model of the affiliate site, the industry segment, the quality of the design and the ways that ads are shown (even if these criteria are not usually mentioned in the formal program guidelines), most maintain a fairly liberal policy when it comes to accepting affiliates. There is general recognition that one of the primary benefits of affiliate marketing is broad coverage, having their ads shown next to a wide variety of content and to a varied audience, and not necessarily just those visitors who fit the merchant's usual customer segments. One merchant emphasized that "many times it's the ugly sites which bring the most traffic". Another sums up their policy as follows: "the criteria are not strict for accepting sites, but rather it's the tracking (monitoring) that happens later which determines whether the site is a good partner or not."

Another important consideration in partner selection is the commission pricing model used by the merchant. Merchants who use a pure cost per sale model stated that while they try to attract affiliates who will generate a large volume of sales, they are not concerned if the traffic sent by many affiliates does not accomplish this goal. However, if the commission pricing includes cost per click, the merchants may be more restrictive in selection since the merchant is paying a commission for each visitor sent by the affiliate.

Furthermore, if the incentive program uses cost per lead commission pricing, the merchant may not want to accept affiliates who run points and rewards programs which offer visitors incentives for making purchases and filling out forms. One merchant with a CPL program states that "what this model brings us are registrations, but what we really live on as a company is sales. So, it doesn't really help us in the end to have thousands of registrations if, in the end, they're not active (i.e. generate revenue for the merchant)."

The affiliate networks also have an important role when an affiliate applies to a new merchant program, as the network can provide references for affiliates based on their past experience representing other merchants on that affiliate platform. One affiliate network account manager states “we know our affiliates, and we know whether or not a particular affiliate is a good fit for a new program. Also, when a new merchant signs up, we can recommend which of our affiliates can help them to accomplish their goals”.

### 2.4.3 Incentives

The incentives used in affiliate marketing programs are outcome-based commissions based on visitors referred, leads, and sales, or some combination of the three. In Spain, these incentives can be classified into five basic commission pricing models, which are chosen depending on the program objectives of each merchant. Each of the models has its own governance challenges. Table 6 below shows the distribution of the programs in Spain:

Pricing Model	Number of programs	Percentage of Total
CPS	60	44.12
CPC + Sale	30	22.06
CPL	22	16.18
CPC	12	8.82
CPC + Lead	12	8.82

The most common model is CPS (cost per sale), where the affiliate is only compensated when a referred visitor makes a purchase. This is the model with the fewest governance challenges, according to the interviewees, since the risk associated with advertising and conversion (getting visitors to make purchases) is transferred to the affiliates. In a pure CPS model, affiliates have an incentive to send “quality” traffic, or visitors who are likely to make a purchase. Otherwise the affiliates receive no compensation for their efforts.

The second-most popular model is CPC + Sale, where the affiliate is paid a high initial cost-per-click commission for each visitor referred, and then an additional commission if a visitor makes a purchase. The objective under this incentive model is similar to a pure CPS model: generating visitor traffic and sales. However, according to one affiliate network representative, this model is more attractive to affiliates “because the merchant absorbs some of the advertising and conversion risk”.

One important governance mechanism available to merchants is their ability to change the commission pricing for a given affiliate or for the entire program whenever they want and for any reason. For example, in the case of CPC + Sale, if the visitors sent from a particular affiliate do not produce a high conversion rate, the merchant may change that affiliate’s commission to a pricing structure focused more on sales.

CPL programs only pay incentives to affiliates when a referred visitor fills out a form on the merchant site. This form can be as simple as a contact form with phone number and email, or as detailed as a credit card or loan application, including banking and employment details. As discussed in the background section, the objective of this compensation structure is to generate leads, but it may be difficult to ensure the quality of the leads. Monitoring is a key governance mechanism for programs using this incentive structure.

CPC programs present the most significant governance issues, as the sole objective is to generate traffic. However, since there is no conversion objective (sales or leads), it can be difficult to gauge the quality of the traffic. According to the affiliate network representatives interviewed, this type of structure is usually used for a short-term program with a traffic quota. Once this quota is reached, either the incentive structure is changed to include a CPS or CPL component, or the program is discontinued.

The risks and governance issues in a CPC + Lead program are similar to those in a CPC + Sale program.

Many merchants operate multiple program levels depending on affiliate performance, and the merchant has the ability to reward an affiliate with promotion to a higher commission level, or to penalize them by demoting them to a lower commission level.

These outcome-based incentives are designed to accomplish program objectives regarding generating traffic, sales and leads. However, they cannot address many aspects of affiliate behavior included in the formal contract. In other words, the incentive structures discussed above address the results of the affiliate activities, but not how they achieve those results. Therefore, monitoring is critical for ensuring that both outcomes and behavior comply with a merchant's requirements.

#### *2.4.4 Monitoring*

The first area to consider under monitoring is how merchants measure the results of their programs. Some important metrics include EPC, CTR, CR, and AOV. EPC is the average earnings per hundred clicks, calculated as the total commissions divided by the total number of clicks times 100. It represents the ability to turn clicks into commissions, and can be calculated both for an individual affiliate as well as for an entire affiliate program. CTR is the click-through rate, measuring the percentage of impressions (times an ad is shown) which result in a unique visitor clicking on an ad. CR is the conversion rate, or percentage of visitors who take a desired action, such as making a purchase or filling out a form, after clicking on an affiliate link. AOV, or average order value, is calculated by dividing the total sales value by the number of sales.

While the above metrics are useful in evaluating programs and affiliates, the most important metric is return on investment (ROI). There are various ways to calculate this metric: the denominator is usually total marketing cost, but the numerator could be sales, gross profit or net profit, depending on the merchant's specific objectives. While a high ROI is clearly preferable to a low one, one merchant

emphasized that they prefer affiliates who bring high volume at a lower ROI to affiliates who have a high ROI but few sales.

While ROI numbers were not disclosed by the interviewees, one media agency representative with experience in the UK claimed that a transactional ROI of less than 120% in the mid- to long- term would be unacceptable, and that this figure would be very difficult to achieve for any program using CPC (which is the case for many affiliate programs in Spain). He claimed that CPC programs tend to benefit the affiliates and the affiliate networks at the expense of the merchants, whose profitability depends on sales, not visitor traffic.

The frequency of monitoring these metrics depends both on the merchant as well as the type of commission pricing used. A program using a CPA model (either CPS or CPL) will usually review the program metrics and individual affiliate metrics bi-weekly or monthly, and changes are made to an individual affiliate's commission structure depending on their performance. However, if a program's commission pricing includes CPC (CPC only, CPC + sale, or CPC + lead), the CR is reviewed daily according to the affiliate networks (after an initial introduction period of a few weeks to a month). If the CR is low for an affiliate, it means that they are sending low quality traffic, where few of the visitors complete a desired action. In this case the commission structure can be changed to reduce the CPC commission, or to change the commission structure to CPC or CPL.

The above relates to the monitoring of outcomes, which is one of affiliate marketing's greatest strengths. However, monitoring affiliate behavior is just as important; the formal contracts include several restrictions on affiliate behavior, especially concerning how an affiliate is allowed to represent merchants in search engine marketing, and to a lesser extent in email marketing.

One of the main ways that merchants tend to recognize fraud or undesirable activity is by monitoring significant changes in the visitors/sales/leads generated by affiliates. For example, an affiliate who usually generates very low volume may all of a sudden generate a large number of clicks, or a very high conversion rate. These

could be symptoms of using popups or forced clicks, or even adware, which “steals” commissions from other affiliates. Another example is in CPL programs where affiliates send a large number of registrations which remain inactive, or do not convert into sales.

The affiliate program representatives stated that they try to monitor the way their ads are displayed on affiliate web sites on a monthly or quarterly basis, but that this is done in an unsystematic way, randomly selecting web sites and visiting them one by one.

One of the biggest concerns of merchants is how affiliates use their trademarks (to use the legal term) or brands (to use the marketing term), especially in search engine marketing. One merchant described their approach as follows: “I’m fine with them (affiliates) bringing in traffic with whatever keyword they want, but leave our brand alone.”

The monitoring strategies used by merchants in this area include the following: first, they register their trademarks with the search engines, so that only the merchant can bid on its own brand. Then, the merchant monitors the search engines for advertising which violates their program restrictions. If the merchant notices an affiliate misusing their brand, they notify them and perhaps exclude them from the program if the violation is intentional and persistent. Most emphasize that this is not a systematic process, however.

Merchants also use the individuals or departments responsible for their own search engine marketing and search engine optimization to help monitor affiliate behavior. Since it is these individuals’ responsibility to keep detailed track of the positioning of the merchant’s web site compared to those of competitors for their important keywords, they are often the first to notice inappropriate behavior on the part of affiliates. One affiliate manager also stated that he uses a third-party auditing service to track the merchant’s brand, and that he often identified affiliate irregularities in these reports. One merchant summarized it as follows: “while there aren’t currently any tools which control this behavior completely, it is still very



controllable through coordination with our internal SEO and search marketing efforts.”

In terms of email marketing, the affiliate managers interviewed expressed little concern because there are few affiliates engaging in this activity currently. However, this is a concern for the future, as many programs are beginning to recognize its potential, while there are currently few restrictions on affiliate behavior using email marketing included in the formal contracts.

## 2.5 Discussion

### 2.5.1 *Summary of Findings*

The purpose of this chapter has been to explore the following research question: How are governance mechanisms used by merchants in one-to-many, Internet-based affiliate marketing programs in Spain to control the activities of their affiliates? Four, inter-related governance mechanisms were identified: formal contracts, partner selection, incentives, and monitoring. The overall conclusion is that there is a considerable lack of transparency as to how affiliates are permitted to represent the merchants’ products and services. The situation is further complicated by the fact that affiliates must consider not only the specific affiliate program guidelines, but also the network affiliate contract as well as other conditions specified by third party intermediaries such as search engines. This makes the affiliate’s task more difficult when it comes to conforming to the expectations of merchants, and it increases the importance of the other three governance mechanisms discussed in this chapter. In addition, the merchants have significant power in their management of their affiliate programs: they generally reserve the right to alter or cancel the arrangement with a particular affiliate at any time and for any reason (which need not be communicated to the affiliate). While this may be an effective governance mechanism, greater transparency may help to create more positive merchant-affiliate relationships.

Table 7 summarizes the conclusions for each governance mechanism.

### 2.5.2 *Implications for managers of affiliate marketing programs*

The following are general recommendations for managers of affiliate marketing programs:

- Merchants should provide more explicit guidelines concerning sponsored search restrictions, the types of businesses which are acceptable as affiliates, and the necessity of including privacy policies on affiliate sites that use email marketing.
- Merchants should conduct regular reviews of affiliate web sites, especially the placement and content of merchant-related information.
- Merchants should do regular, systematic keyword searches for their brand and related keywords in order to identify the keywords and advertising messages used to represent the merchant's brand.
- Affiliate managers should coordinate with the merchant's search engine marketing and search engine optimization efforts as a cross-check on affiliate behavior.
- Email should be carefully controlled: either the affiliate should be restricted to using content prepared by the merchant, or they should be required to send the affiliate manager a copy of any promotional emails which include merchant-related content.

## 2.6 Conclusion

This has been an exploratory study of the governance mechanisms used by merchants in one-to-many Internet-based affiliate marketing programs in a specific market, Spain, to control the behavior of their affiliate partners. While we cannot ensure that the sample was thoroughly random, we do believe that the relatively small size of the market/population enabled us to capture a large proportion of the

overall phenomenon. Of course, the Spanish market may not be representative of the global phenomenon.

Since this was an initial exploratory study, a more predictive approach might be useful in analyzing the relationships between these governance mechanisms and program outcomes, both positive and negative.

In addition, since Spain is a relatively new market in terms of affiliate marketing, future research may expand the study to include more established markets such as the U.K. and the U.S. For example, the U.K. and U.S. may be more restrictive in terms of program guidelines and partner selection, and incentives may be fine-tuned on a more frequent basis. Furthermore, their monitoring efforts may be more extensive than those in Spain, and may shed further light in terms of how best to ensure positive outcomes and behavior, and to identify/avoid opportunism.

**Table 2.7 Conclusions for each governance mechanism**

Governance Mechanism	Conclusions
Formal Contract	There are some limitations placed on the use of search engine marketing by affiliates, primarily related to the use of the merchant’s trademarks. The content of the advertisements is not addressed, however, either in search engine or email promotions; this is left to the discretion of the affiliates. Here, the lack of explicit guidelines increases the risk of an affiliate misrepresenting the merchant’s business, and thus increases the importance of the other governance mechanisms discussed here.
Partner Selection	The formal contracts clearly prohibit affiliates who use illegal or offensive content or who use the trademark of the merchant in their website address. It is unclear, however, the types of affiliate business models and industry segments which are acceptable. The interviews indicated that while merchants are most interested in affiliates who can generate a high volume of traffic and sales, offer complementary products and have well-designed, professional sites, they still accept the majority of affiliate applications in order to reach the broadest audience of potential customers.
Incentives	Incentives fall into five basic categories of outcome-based commission pricing schemes. The model chosen by a given merchant depends on the objectives for their program and the type of model used has governance implications, particularly regarding the types of affiliates who should be accepted in the program and the level of monitoring required. For example, a CPC program requires much more frequent monitoring to ensure that affiliates are sending high-quality visitors.
Monitoring	<p><b>Outcomes:</b></p> <p>Outcome-based monitoring activities are focused on tracking the number of visitors, sales and registrations generated by the affiliate, with criteria according to the particular commission pricing scheme in place. Return on investment is the primary metric used to evaluate affiliates and programs. Affiliates who perform well are rewarded by promotion to a better commission level, and those who perform poorly may be penalized by demotion to a lower commission level, or eliminated from the program altogether.</p>
	<p><b>Behavior:</b></p> <p>Merchants look for sudden changes in affiliate performance as possible indicators of fraud or irregular activity. Most conduct periodic random checks of affiliate websites, albeit in an unsystematic way, to evaluate the placement of their advertisements. Finally, merchants generally identify affiliates who do not comply with their search engine marketing restrictions on an exception basis through periodic searches and through coordination with their search engine optimization and search engine marketing departments.</p>

### 3 GOVERNANCE MECHANISMS IN AN ERP-VENDOR ECOSYSTEM

Note: An earlier version of this chapter was presented as Research in Progress at the International Conference on Information Systems (December, 2008), and the full manuscript was submitted to Organization Science and has received a second “revise and resubmit” response from the editors (06/2012). We are currently in the process of preparing a revised manuscript (estimated submission date 12/2012).

#### 3.1 Introduction

Recent literature has used the concept of ecosystems to describe the complex interdependencies between various roles within industry sectors including platform architects, core producers, complementors and communities of users (Gawer and Cusumano 2002, Messerschmitt and Szyperski 2003, Iansiti and Levien 2004). The use of this biological metaphor is an acknowledgement that no one firm can address every customer need. A vibrant product ecosystem requires generalists and specialists; stability and inertia; and the ability to flexibly evolve with developments in consumer tastes and technological frontiers. Kapoor and Lee (2013) found that firms who pursue alliances through complementors exhibit a greater probability of investing in new technologies than firms who follow transaction-based or vertical integration strategies. The biology analogy further emphasizes that strategy is not merely a zero-sum game, and that the health of an individual firm is dependent on the overall health of the business ecosystem (Iansiti and Levien 2004, Iyer et al. 2006, Adner 2006). Consequently, for an ecosystem to remain healthy, participants must share value with the ecosystem; that is, give as much as they take (Iansiti and Levien 2004). This emphasis on sharing within the ecosystem immediately suggests an open strategy should be adopted, at least partially, by firms. One way in which those at the core of an ecosystem enable participants to give back to the ecosystem is to open up parts of an otherwise proprietary or closed platform. Central, core participants in an ecosystem known as keystone players create value by developing “platforms” consisting of services, tools or technologies to foster innovation, growth and diversity from independent actors on the periphery (Jeppesen and Molin 2003, Iansiti and Levien 2004, Prugl and Schreier 2006).

The idea of assuming a partially open or hybrid strategy is central to much of the literature on Open Innovation (Chesbrough 2003, Gassmann 2006), which argues that successful executors of an open innovation strategy will offer incentives and tools for innovation outside the firm, combined with some mechanism for value appropriation from these creations. As an example, West (2003) suggests that computing architectures can benefit from opening commodity layers of the software in order to harness developments in open source communities, but with carefully considered restrictions to ensure the retention of some value by the designer or protagonist of the architecture. This suggests a very clear challenge in designing processes that govern collaborative development and implementation projects in a central core and heterogeneous periphery.

While research on ecosystems and open innovation primarily address innovation between a company and its development partners, other streams of research focus on innovation between a company and the end-users of the company's products. Von Hippel (2001) has studied user innovation communities, where consumers adapt an existing product to their specific needs without the need for further intervention from the manufacturer. Follow-on research on user innovation has focused on "toolkits", which encourage external firms and individuals to create complementary products or add-ons (Jeppesen and Molin 2003, Prugl and Schreier 2006, von Hippel 2001). Prahalad and Ramaswamy (2003) discuss co-creation experiences, where individuals interact with an "experience environment" composed of a nodal company, suppliers, partners and customer communities in creating value. The authors view innovation from the perspective of the end-user or customer, suggesting that value creation is not company-, product- or even customer-specific, but is rather "the purposeful interaction of the individual consumer with a network of companies and consumer communities that enable personalized experience" (p. 14).

Arguably, however, where the literature does stress innovation or creative processes outside the firm, it is less explicit about the process of value appropriation and control. For example, Chesbrough and Appleyard (2007) delineate a variety of strategies that combine traditional strategy with open source business models and highlight the need to balance value creation with value capture. They state, "If

*companies cannot find ways to profit from their innovation activities in open initiatives – through deployment, hybridization, complements, or self service, they cannot sustain their participation in those initiatives over time* (Chesbrough and Appleyard 2007 p. 69)." Where their offered typology of open business models goes far to address co-existence and creation, it is less explicit on how to achieve value appropriation, and omits any deeper discussion of governance and risk in open innovation processes. Adner (2006) does explicitly address the idea of risk in open innovation, suggesting that timing and delay are key tools to employ to harmonize highly complementary product launches in the ecosystem. West and O'Mahoney (2008) discuss the tension between control and growth experienced by sponsors in sponsored source communities, concluding that the more control sponsors tried to exert over the direction of the community, the more they restricted the community's ability to grow. Their study highlights a need for a balanced equilibrium between innovation and control; the need to govern, but not over-tax the ecosystem.

Our research is based upon several premises. First, we suggest that there is a fundamental tradeoff between creativity and control salient in technology platforms or ecosystems. Creativity without control can lead to excessive fragmentation and variable quality, reducing cohesion and value for potential adopters, and inflicting the ecosystem sponsor with the reputation costs of the poor quality. This will limit value for all ecosystem participants. By contrast, excessively strict or poorly designed control mechanisms can starve creativity and hamper innovation, similarly damaging the health and growth of the ecosystem. Second, we argue that research on governance and control mechanisms is less developed or mature than discourse on creativity phases, and therefore warrants attention in order to understand this critical interdependence between creativity and control. Finally, we contend that prior research has tended to view technology ecosystems as *homogeneous*, assuming that governance is uniform for all parties. We propose that there is a need for empirical research which adopts a more subtle view of technology ecosystem governance, acknowledging that participant roles vary, but more importantly, governance across the ecosystem must embrace heterogeneity, even for similar participant roles.

Accordingly, we formulate the following main research questions:

**RQ 3.1** What are the primary platform mechanisms required for the coordination and control of technology ecosystems?

**RQ 3.2** How do platform mechanisms interact to foster creativity and innovation, and ensure value appropriation and control in technology ecosystems?

**RQ 3.3** How do incentive and control mechanisms accommodate ecosystem heterogeneity?

One industrial sector that has successfully developed a vibrant ecosystem of 3rd party complementors for generativity is enterprise resource planning (ERP) software. Providers of commercial accounting and manufacturing software suites, such as SAP and Oracle, have long benefited from the expertise of local or regional implementers to make country specific modifications, sector specific add-ons, and company specific customizations that meet the local, distinct needs of their clients.

The use of third party partners to do this is largely driven by the extreme heterogeneity that characterizes the enterprise resource planning software market. ERP software is designed to be a common suite of financial accounting, manufacturing, and logistics software that is modified to function in a global market of over 100 legal & accounting regimes. Orthogonal to national differences, myriad sector differences require modifications and add-ons to meet the needs of a wide range of entities from manufacturing to service organizations in the private and public sectors. Using one standard software suite to meet the different requirements of, for example, paper processing, health care, financial services, manufacturing, or education, is a formidable challenge. Consequently, the ERP software manufacturer wisely consigns these localization tasks to regional partners with far greater expertise in their native markets, functioning as accounting, legal, or sector specialists (Sarker et al. 2012, Ceccagnoli et al. 2012).

Accordingly, our analysis studies one such major vendor of ERP software. We perform an extensive analysis of the governance mechanisms developed in a broad ecosystem that includes the software vendor at the core, and a large community of independent implementers that develop and implement complements targeted towards myriad national regions and industrial sectors. Our ERP ecosystem is of



interest for several reasons. Firstly, it is one of the few empirical examples of how technology platforms function in a for-profit, business-to-business context (Sarker et al. 2012, Ceccagnoli et al. 2012). Secondly, given the severe heterogeneity across customers, complementors, and complements, ERP ecosystems represent an extreme form of technology ecosystem, where the underlying creativity-control tension arguably assumes its utmost manifestation, and its appropriate management is of greatest potential consequence.

Through an inductive exercise, we develop a preliminary framework that suggests the need for four main components in technology ecosystem governance: a) incentives, and b) infrastructure for creation; as well as c) incentives, and d) infrastructure for control. Our findings suggest a large role for agency and self-selection on the part of ecosystem participants as they determine their level of involvement with the company at the core. The governance mechanisms are explicitly designed to embrace the agency of heterogeneous ecosystem participants, meaning that the decision and action to create, and thereafter forfeit some discretion of the innovation by entering a phase of control, is completely voluntary on the part of a periphery member. As such, our analysis suggests that in our focal ecosystem, the control infrastructure embraces heterogeneity via graduated certification levels and an ecosystem specific currency that permits lateral mobility. This infrastructure further serves a specific purpose of filtering, variance reduction and cohesion building in the ecosystem. Consequently, our data and model highlight that the incentives for creation and control must be well-balanced, complementary, and often interdependent. Specifically, incentives and infrastructures for control must complement -or add value to - the creation process, not contradict it, in order to facilitate a balanced cycle of innovation and value appropriation in the ecosystem.

The structure of the chapter is as follows: Section 3.2 presents a review of the extant literature which informs our study and theorizing; Section 3.3 provides a description of our data collection and elaboration of our findings; Section 3.4 couples the relevant theory with the findings of our study to formulate Findings generalizable to further validation across other technology ecosystems. Sections 3.5 and 3.6 discuss limitations and future research, as well as the conclusion of this analysis, respectively.

## 3.2 Background Literature

There are two major streams of literature that inform our analysis of ecosystem governance: literature on platforms, originating primarily from software platforms; and organizational ecology, emerging from evolutionary theory and population ecology.

### 3.2.1 *Platforms*

Platforms are systems defined by markets with core components made by one company and complements made by a variety of companies. They have 2 characteristics that are important: 1) they should perform an important function within a "system of use" or solve an important technical problem within an industry; and (2) it should be easy to connect to or build upon the core solution in order to expand the system of use and allow new and even unintended end-uses. The core firm's product has important, but limited value when used alone, but substantially increases in value when used with complements (Gawer and Cusumano 2002, 2008). These authors define 4 levers of platform leadership: a) the scope of the firm, that is what activities are performed by the core, and what is completed by complementors; b) product technology, meaning the nature of the technology, its modularity, the degree of openness of the interfaces and how much information of the core technologies should be disclosed to complementors; c) relationships with complementors, including the explicit economic incentives and inherent levels of cooperation or competition and how to treat potential conflicts of interest (complementors can create substitutes and thereby become a competitor); d) internal organization of the platform leader that enables the successful governance and responsive management of the platform (Gawer and Cusumano 2002, 2008)..

The theoretical perspectives on creation in platforms and ecosystems find their genesis in several well known streams of literature. Open innovation is one field of study which proposes opening up the innovation/creation process through open business models, whereby external ideas are internalized and unused internal ideas are allowed to flow outward (Chesbrough 2003, Gassmann 2006, West 2003). However, the concept of incorporating third parties in a company's innovation strategy is prevalent in a variety of research streams. Sawhney and Prandelli (2000) proposed a

novel governance form for managing distributed innovation called “communities of creation” as a way to create a shared space for collaboration, while providing the coordination mechanisms typically lacking in markets. Research on open source software has likewise embraced community contributions to innovation, though the research on open models with a strong, profit seeking sponsor at the core has been less extensive (Shah 2006, West and Gallagher 2006, West and O’Mahoney 2008).

Platforms have been defined as consisting of three major components, the core, the complements, and the interfaces between the two. Certain components remain fixed over time, where others are permitted or even encouraged to vary (Baldwin and Woodard 2010). The complements are generally highly variable, where the core is less variable, although some variability is present.

The issue of evolvability is central to platforms. In making peripheral components variable, platforms become adaptable to future technological developments, social or business trends, and uncertain or unanticipated environmental changes. Complementors have the ability and mandate to respond to the needs of users with a level of speed or specialization that would otherwise be prohibitively difficult for the core. Explicitly, they invoke the speed of market mechanisms, a Hayekian response to the here and now, yet simultaneously leverage the scale, benefits and network externalities of a stable core infrastructure. This is particularly valuable when consumer patterns are heterogeneous, technologies are fragmented and overall market trajectories are uncertain (Baldwin and Woodard 2010, Boudreau and Hagiu 2009). It is important to highlight that variability and creation are not limited to the periphery or complements of the platform. As Baldwin and Woodard (2010) highlight, core components of a system will also need to evolve over time, if for no other reason than to embrace basic technological advances in processing, storage, communication, power consumption, etc. The core can govern the evolution of the infrastructure internally, but may also integrate innovations from complementors or other market participants simultaneously. Thus, in most cases, we will find evolvability at both the complement/application layer and to a lesser degree the core/infrastructure layer.

What remains stable through the evolution of the platform are the interfaces or thin crossing points (Baldwin 2008) that govern interaction between the layers (Baldwin and Woodard 2010). These architectural control points (Woodard 2008) govern the relationships between the core and complements, creating bottlenecks where platform operators can, via property and other legal rights of exclusion, grant or deny outsiders access to the system (Rochet and Tirole 2003; Jacobides et al 2006; Boudreau and Hagiu 2009). Thus, control and design of the interfaces is considered one of the most important lever for governing the platform. At one extreme, platform architects can design very thin interfaces making the platform highly modular with high levels of growth and innovation. This makes components more appropriable, subject to reverse engineering and duplication, and complementors quickly become competitors. Moreover, it has been argued that increased layering or modularization is synonymous with greater fragmentation, inefficiency and inferior user experience (Messerschmitt and Szyperski 2003). At the other extreme, higher levels of complexity and integration with core components can increase the intrinsic protection from appropriation, yet at the same time stifle innovation in the ecosystem and bound the level of evolvability of the platform (Baldwin 2008). Messerschmitt and Szyperski (2003) support this argument by suggesting that the greatest number of entrepreneurial start-ups are found at the outer layers of the technology stack: i) infrastructure, and ii) application; where diversity is less constrained by interface compatibility. The fewer layers you have to be compatible with, the greater the diversity in the solution set (Messerschmitt and Szyperski 2003).

Accordingly, the platform architect should aim to maintain strong interdependencies between the core and the components as well as high switching costs to competing platforms. Typically, platforms permit and desire levels of openness or portability within their ecosystem as governed by interfaces. However, although complete portability across competing platforms is often desired by developers and customers, some authors argue that it is not desirable, as it would eliminate functional differentiation and lock-in, and thereby erode any economic incentive to invest in what is a commoditized platform with limited potential rents (Messerschmitt and Szyperski, 2003)

### 3.2.2 *Control and Governance*

The issue of control in technology ecosystems has received less attention in the literature to date, and the studies which do exist have generally not been explicit about the mechanisms required for control. In order to address a perceived fragmentation in prior research, Markus (2007) conducted a qualitative review and synthesis of the research on control and governance in open source software projects (OSS), proposing six main categories of formal and informal structures and rules: ownership of assets (including intellectual property); chartering the project, which refers to statements about the visions and goals of the project; community management, including rules about membership and roles within the community; software development processes; conflict resolution and rule changing; and the use of information and tools.

It is important to emphasize, however, that much of this research involves self-organizing communities, while platforms with an authoritative sponsor at the core have received less attention. One exception comes from West and O'Mahoney (2008) who, through an analysis of 12 sponsored open source communities, identified three design dimensions that sponsors consider: intellectual property rights, development approach, and model of community governance. In the same study, the authors discussed the tension between control and growth experienced by sponsors, and found that the more control sponsors tried to exert over the direction of the community, the more they restricted the community's ability to grow; thereby highlighting a need for a balanced equilibrium between innovation and control.

Finding an appropriate balance between creation and control has also been echoed in the platforms literature (Iansiti and Levin 2004). The economic logic of platforms suggests that a high level of fixed components in the core allows the realization of economies of scale and the amortization of fixed costs. On the periphery, economies of scope can be realized through the creation of specialized complements and constant experimentation (Baldwin and Clark 2000). Complementors often have a level of industry knowledge or specialization that would be outside of the logical boundaries of the core to maintain in order to develop the infrastructure. As complementors act as independent agents, they are attracted to a market when they

perceive economic value. Hence, the platform leader should create economic incentives for ecosystem members to invest in complementary innovations. Likewise, the platform leader must ensure that they themselves can benefit from these innovations, and will typically use non-price instruments (Boudreau and Hagiu 2009); that is, some kind of infrastructure in addition to monetary incentives to enforce a degree of value appropriation.

Hence, protecting one's profit while enabling complementors to realize a reasonable return is one of the most difficult design challenges in a platform. Platform architects should not excessively tax their ecosystem, but rather, support a regime of property rights and legal protection that is sustainable for both the periphery and core (Iansiti and Levin 2004). Finally, the issue of core-complementor boundaries does not need to be static. Rather, the platform can practice a form of open innovation within its own system, choosing to roll internally developed innovations out to complementors, or leveraging degrees of control over complementor innovations and, in some instances, appropriating them entirely (Iansiti and Lakhani 2009).

Boudreau and Lakhani (2009) synthesize much of this literature on external innovators by suggesting two conceptual extremes, open innovation markets and open innovation communities. Innovation markets tend to be based upon profit seeking behavior, career advancement, or other extrinsic motivations, where innovation communities are based upon intrinsic rewards such as intellectual stimulation, sense of purpose and identity and communal affiliation. For example, several studies have examined motivations behind why users contribute to open communities, especially in the context of open source software (for example, Lakhani and Wolf 2003, Hertel et al. 2003, Hars and Ou 2002, von Hippel and von Krogh 2003), including such varied responses as enjoyment, social status, skills development, and economic benefit. As such, innovation markets will be governed by formal mechanisms such as explicit contracts and licensing, where innovation communities will be governed by embedded social norms and intrinsic rewards. Most platforms or ecosystems contain instances of both market and communities in varying degrees. As an example, highly profit oriented ecosystems can also employ extensive community mechanisms to foster peer cooperation and sharing in complementor communities (Iansiti and Lakhani 2009).

### 3.2.3 *Legitimacy and Status*

Our work on technology ecosystems is also informed by an older stream of discourse on social ecology. Sociocultural evolutionary theory is largely attributed to the seminal work of Campbell (1965) and has since matured into what is called organizational or community ecology. Organizational ecology investigates the selection processes that dominate sectors, communities and ecosystems (Singh and Lumsden 1990). Specifically, explaining the birth, growth, transformation and demise of human social systems, community ecology defines communities as collections of entities that share important similarities and depend upon the same mix of resources to survive (Monge et al. 2008).

By incorporating sociological mechanisms into what is population dynamics, Hannan (1988) was strongly focused on processes of legitimization which provides greater access to resources. His main tenet was that organizational forms in the broader sense can be legitimized, not individual ones. However, the question of how legitimacy is conferred or how status can be increased by individual actors remains largely unspecified. If we assume that actors on the periphery of the ecology suffer from illegitimacy and lack of status due to a liability of newness (Stinchcombe 1965), then there is a question as to how reputational stock can be transferred from the core to the periphery. Research argues that uncertainty exists concerning the quality of a firm's products in market exchanges (Akerloff 1970). As such, high status serves as a signal or proxy of quality to help mitigate the problems of uncertainty, as status is assumed to be correlated with quality (Podolny 1994). Status also serves as a currency or entity that can be awarded to lower status firms through mechanisms of affiliation; that is, endorsements or affiliations can transfer de-facto status from a high status firm to a lower status partner (Castellucci and Ertug, 2010).

Hannan and Freeman (1984) suggested that the dynamics, particularly rates of change, can differ on the core versus periphery of individual organizations, as well as larger communities. Carroll (1985) following this logic, proposed a model that embraces the concept of niche width, asking if it is better for an organization to be a specialist or generalist. One major argument of this discourse is that when the generalists dominate the core of the resources space, specialists can survive on the periphery via a process

called resource partitioning, where generalists and specialists require distinct resources. This minimizes competition and enables symbiosis, where ecosystem cores can embrace and nourish the periphery as a source of non-competing specialization. Moreover, the platform core can scan the periphery and cherry pick the best innovations, acquiring them either by mandate or permitting them to self select themselves closer the core in an effort to obtain some operational or reputational advantage.

#### *3.2.4 Ecosystem Heterogeneity and Cohesion*

For these mechanisms to function effectively, an information infrastructure is needed to monitor the entire ecosystem, transferring information about peripheral activities to the core, as well as manifestation space in which core offerings to the periphery are made accessible. Such a shared technological infrastructure facilitates cooperation and transactions by defining procedures, interfaces, incentives, and codes of conduct and conflict resolution (Boudreau and Hagiu 2009, Mockus et al. 2002, Sawhney and Prandelli 2000, Scacchi 2002). Higher quality infrastructures increase the quality of the reciprocal exchanges (Astley 1985) which facilitate the development of common competencies which are necessary for the constant adaptation of the environment vis a vis competitors (McKelvey 1982). These mechanisms transfer competencies from one generation to the other, building a common culture within the ecosystem. This is what the professional literature has called building a “shared meaning” (Hagel and Seely Brown 2005 pg.89) in business networks, where business processes and technologies are aligned with incentives to facilitate the development of common norms and capabilities. Value creation in an ecosystem must take into account dynamic, context-dependent processes; heterogeneous goals of ecosystem participants; and the fact that the growth and viability of the ecosystem must be managed as a separate business activity above and beyond that of individual participating firms (van der Borgh et al. 2012).

A clear tradeoff exists in ecosystem design. Ecosystems seek to benefit from the depth, flexibility, and expertise of dedicated niche specialists in a manner that would be prohibitive for larger, more homogeneous and integrated organizations. By attracting specialists with different backgrounds and perspectives to address difficult



problems presented by clients, the ecosystem can foster “productive friction” (Hagel and Seely Brown 2005 pg. 100) which increase the possibility for innovation, learning and competency building. The location of the complementor in the ecosystem, whether upstream or downstream, may also have an impact on the core firm’s ability to capture value. Adner and Kapoor (2010) find that challenges in the upstream development of components tend to increase the performance advantage of the core while challenges downstream in complements tend to decrease this advantage. However, excessive specialization, diversity and random competition can lead to destructively high fragmentation and coordination costs (Boudreau, forthcoming) which can delay rates of development and adoption of both the core and the complements (Adner 2006). Moreover, unchecked variance in quality can lead to agency costs, where the platform core bears the negative costs of poor quality of the complementor or their applications (Wolter and Veloso 2008). As such, ecosystem governance can employ explicit rules and procedures along side of intrinsic embedded norms within the community to facilitate reciprocity. This fosters inimitable competencies and increased quality, thereby improving the sustainability of the community and protecting it from predation. Formal and informal governance can be used to institutionalize common behavioral patterns, expectations and norms that improve both the quality and cohesion of the ecosystem (McKelvey 1982).

### 3.3 Data

31 semi-structured interviews were conducted during the period of November 2007 to June 2010 with a variety of entities active in the sales channel for the enterprise software suite of a major, multinational software manufacturer (due to non-disclosure agreements in place, the software manufacturer which sits at the core of our study is hereafter referred to as “the Software Vendor”), including representatives from the Software Vendor’s training and productivity centers, as well as product and channel/partner managers. We employed a theoretical sampling approach, selecting subjects for their similarities as well as their differences. Software Vendor respondents (N=16) were selected from a wide enough selection of functional areas within the Software Vendor in order to understand the full breadth of mechanisms and programs in place. These include channel management partners as well as

development managers and R&D directors. In addition, we interviewed a selection of independent implementation partners (N=10). Partners were chosen based on initial recommendations from Software Vendor management and subsequent recommendations from the interviewees, with the objective of interviewing a representative cross section (size and industry, as well as geographical span). After this initial group, a snowball sampling approach was pursued, with future respondents chosen based on recommendations from the partners themselves. We also interviewed a selection of customers (N=5), all in distinct industry sectors, in order to incorporate the end-user perspective in the study.

We used an inductive, qualitative approach in our research design in accordance with the exploratory nature of the study. The data were analyzed using a grounded theory approach by identifying general concepts, organizing the concepts into categories, and identifying properties for these categories and the relationships among them (Glaser and Strauss, 1967). Categories were chosen by triangulating four primary sources: the Software Vendor's partner program guidelines (archival data), interviews with representatives from the Software Vendor, interviews with partners and customers, and prior theory. This was an iterative process, with several rounds of addition and consolidation of the categories. Archival data from the Software Vendor was used to complement data gathered from the respondents. The initial interviews were semi-structured with the primary objective of identifying the various mechanisms which form the business model of the ecosystem. As the various platform mechanisms revealed themselves, multiple follow-up interviews were staged with the interview subjects, in order to ensure as complete a response as possible from each interviewee.

By the end of the interview process, the interviews became more formal, with the mechanisms identified in Figure 1 providing the basis for discussion. Furthermore, multiple validation incidents were staged in order to cross-check information provided by partners and customers with representatives from the Software Vendor, and vice versa. The interview process was concluded when no significant additional insights were obtained from additional data points and theoretical saturation was achieved. Additional validation of the theoretical model was obtained from industry experts and

researchers external to the sample ecosystem, and the resulting feedback has been incorporated into the proposed Findings in the theory section.

Here we provide more detail as to the specific data collection approach followed. We began with a first round of data collection with representatives from the Software Vendor. We transcribed the interviews that we were able to record throughout the process, and highlighted recurring themes. We highlighted positive observations in green, and negative ones in red. In these first interviews, the predominant themes included: revenue allocation, localization, upgrades and product roadmaps, implementation methodology, partner training, partner certification, and vertical solutions. Next, we conducted our initial semi-structured interviews with partners using these themes as a guide. In these interviews additional themes emerged such as: collaboration between partners, marketing and financial support, and recruiting support. We then returned in some cases to prior interviewees to discuss these additional themes, gaining additional support for our observations in some instances, and obtaining a counterpoint in others.

The following section details the “raw” mechanisms put in place by the core, representing the physical design of the ecosystem platform, as well as a narrative explanation of a typical implementation process. The succeeding section describes the conceptual apparatus, elaborating upon the interplay between the incentives and infrastructure which encourage creation, as well as the incentives and infrastructure which enable control.

### *3.3.1 Sales and Implementation*

Our analysis identified three main roles in the software ecosystem: the Software Vendor, partners, and customers. While we have used the generic term “partner”, it must be acknowledged that there are a wide variety of companies included in this group who differ on many dimensions such as size; nationality; regional vs. national vs. international focus; type (independent software vendors, value-added resellers, etc.); as well as application development partners, implementation partners, and those which focus on both development and implementation. In our subsequent analysis, we equate all partners as “complementors” from the platforms literature. These can be entities that write applications or add-ons, but also implementers or

training partners that offer service based complements. For Sarker et al. (2012) key resources which the Software Vendor brings to the relationship include technically high-quality core ERP package, technical know-how, brand, knowledge community with knowledge-sharing platform, a global network, and financial strength. According to the authors, the partners bring industry competence, client-specific knowledge, close relationships with client organizations, reach to clients in specific geographic locations and/or specific industry verticals, human resources for sales, consulting, and development.

We divided the platform processes into three main areas: a) focus on product and channel development, b) focus on early stage sales, and c) focus on implementation and late stage sales. In addition, we describe the use of the various platform mechanisms as they relate to the actual development of partner solutions and implementations of the software for end customers. These are illustrated in figure 1 below. We should emphasize that there are two primary types of partners who contributed to our understanding of these mechanisms: value added resellers (VAR's), and independent software houses (ISV's). While ISV's would focus primarily on product and channel development, VAR's would focus either on Sales plus Sales and Implementation, or they might undertake all three functions if they were engaged in developing their own software solutions as well.

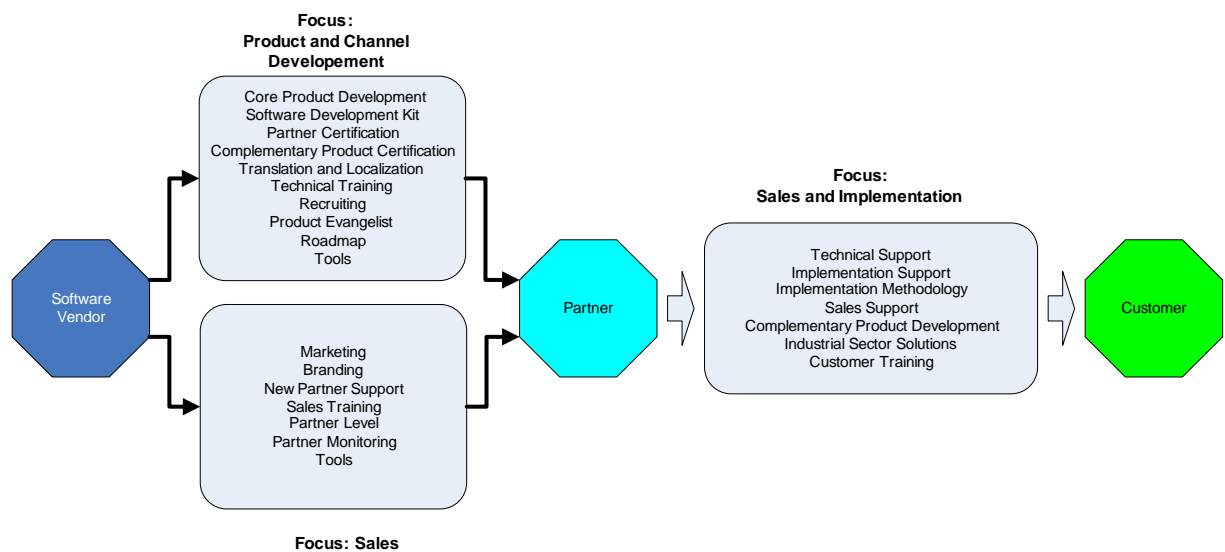


Figure 3.1. Platform mechanisms in the software ecosystem

The process begins with the marketing efforts of partners, which are normally managed by the individual partner, but may be performed with the support of the

Software Vendor in the case of certified partners. In discussions with the customers, the consensus is that the decision of software product selection is made through a combination of referrals from friends and colleagues, as well as third-party ratings, reviews and forum discussions on web sites. Once a software package is chosen, the decision of which implementation partner to choose is made primarily through referrals from colleagues, and potentially through the Software Vendor itself; the Software Vendor has established a group of select international partners whom it contacts for significant projects. These partners align themselves closely with the Software Vendor and represent an inner circle of preferred collaboration partners. An additional source for finding implementation partners may be through the custom partner solutions themselves, which are included in the partner solution finder catalog. Partners who elect the highest level of certification are given priority listings in the vendor catalogue. In addition, there are many third-partner user community sites (the Software Vendor lists over 100 on their web site) which provide ratings, peer-reviews, and discussion forums. Finally, a partner may be engaged in a project through another partner looking for complementary expertise in a particular vertical with which they are not familiar, or for local expertise on an international project.

Once the customer chooses the implementation partner, the partner and customer decide which software products to implement. The initial software may be the generic product developed by the core, or it may be a custom modification or vertical complement created by the partner. Two important mechanisms which encourage the creation of partner solutions are the flexible design of the software's open source-code and the licensing agreements. The flexible, open source-code of the software allows partners to easily configure and/or customize the core software to match customers' requirements. The licenses for core products are owned by the Software Vendor and license revenues are shared between the Software Vendor and the partners, while the license for any partner solutions or add-ons are owned by the developing partner. Partner solutions come in many forms, including slightly modified versions targeted towards specific local requirements, "horizontal" solutions for specific applications such as taxation or human resources, and vertical industrial sector solutions, which represent more comprehensive solutions designed for a particular industry, or even a specific region.

Partners create their vertical solutions based on their experience with one or, at best, a few customers operating in that industry segment. The partners claim that their vertical is based on industry standards, but in reality, it is often based on a simple, small sample. While partners already have direct contact with customers and do engage in co-creation through activities such as product customization and business process redesign, these are generally project based and one-to-one, i.e. one partner to one customer. Community infrastructures such as websites and conferences are cultivated to allow individual partners to collaborate on many-to-many engagements between partners and customers. These include cooperative implementations as well as mixed-module implementations composed of complements from multiple partners. In instances of multiple partner implementations or applications, revenue sharing is negotiated on a case-by-case basis with guidelines provided by the Software Vendor.

The configuration and customization of the software is a collaborative process between the partner and customer. The partners may use no implementation methodology at all, their own methodology, or the methodology developed by the Software Vendor. There are significant potential benefits to standardizing the methodology used, including improved quality and lower total cost of ownership. The Software Vendor has a clear interest in increasing the use of their implementation tools in that they are believed to result in higher quality implementations and fewer errors.

Customer training and support are the responsibility of the partner, while the Software Vendor provides support to partners depending on their level of certification; higher levels of certification receive higher levels of support. Likewise, maintenance and upgrade of both core software and partner solutions are the responsibility of partners. The cost of maintaining compatibility between partner solutions and new versions of the core software is born by the partner, which increases the importance of adhering to development standards.

Each software implementation is unique, and may be considered part of a co-creation experience in which the implementation partner and customer play an active role in order to develop a custom solution which meets the customer's particular needs. The Software Vendor plays a more passive role by providing a core software

product which is modular, highly configurable and easily customizable. The Software Vendor offers some support to the implementation partners via sales support for larger clients, technical expertise, online tools and templates for presales proposal preparation, project management, and implementation tools. The final solution is the result of choosing certain modules, configuring the core software and customizing it when appropriate, integrating the core software with partner vertical solutions and third-party software, and changing the customer's business processes when necessary. In other words, the implementation process is enabled through the basic platform as provided by the Software Vendor, combined with custom software solutions from the partner, the partner's experience and expertise, and the customer's knowledge of their business. In addition, the experience the partner gains from executing several implementations in a given vertical sector is fed back into the software development community for industry vertical solutions.

### 3.3.2 *Levels of Control*

Our analysis identified a number of specific governance mechanisms that the Software Vendor developed to cultivate creation and enforce control in the ecosystem. Initial entry into the ecosystem as a registered partner is not particularly difficult; it requires approval and some validation by the Software Vendor. Partners seeking to develop skills and experience in the implementation of the software application can contact new partner support and training centers run by the Software Vendor or third party training entities, although this is not obligatory. The source code of the software is open, and it is both highly configurable and highly customizable for partners and clients. This is consistent with the positioning of the software toward SMEs, who typically do not welcome large changes to their own business processes, but would rather change the software to fit their existing business structure. Consequently, the acquisition or development of skills required for advanced implementations require substantial effort. The Software Vendor has therefore created a number of utilities to support partners in this process.

Table 1 below identifies five levels of elective control in the Software Vendor ecosystem across the dimension of *partner certification level*, describing the infrastructure mechanisms and incentives available to participants at each level, as

well as the resulting value derived by the Software Vendor. These levels are, with limited exceptions, inclusive (level 3 is a small business specialist), meaning that the requirements and benefits of the higher level build upon those of the previous level. Advancement to levels four and five are permitted by the acquisition of internal points, which are awarded for a variety of achievements and are valid for a limited time. Points are awarded for many activities, including technical certifications of personnel, specialist competency designations, demonstrated competencies in specific application areas, validated customer references, technical testing of applications, successful participation in customer satisfaction surveys, and the amount of licenses and/or revenue generated by the sales of the core's platform product in specific markets. The internal point system permits advancement through higher levels through criteria that are both feasible and useful for a very heterogeneous population of solution and implementation partners.

Note that the key concept is that each level of control imparts some additional value to *both* the *periphery* and *core*; that is, a value proposition is subsumed in the control infrastructure. For example, new partner support centers and productivity centers offer support and training to newer partners who benefit from stimulus to achieve critical mass. This additional training also improves quality control in the final products and services. Likewise, higher levels of certification for both solutions and partners require more stringent control (testing by third party, documented industry level implementations of solution), yet simultaneously offer value to the periphery (higher quality solutions/services, co-branding with the Software Vendor), and the core (expanded catalog of high quality partner solutions, greater scale and scope of ecosystem, additional revenue).



<b>Table 3.1. Partner Levels, Requirements and Value Proposition</b>			
<b>Partner Level</b>	<b>Requirements</b>	<b>Value to Periphery members</b>	<b>Value to Core</b>
Fifth	Maximum point threshold Partner personnel certified Core vertical solutions certified Demonstrated competency in focused strategic area Participation in customer satisfaction surveys Dedicated Software Vendor account manager for large clients Validated customer references	Highest level of co-branding Maximum suite of software licenses Access to development libraries Priority listing in solution finder catalogues Priority real time technical support Financing facility Dedicated Software Vendor account manager for large clients	Core product license revenue Expanded core software offering and vertical solutions Specialist competencies Increased license revenue
Fourth	Medium point threshold Partner personnel certified Partner solutions certified Customer references Partner subscription fee	Expanded suite of licenses for development and infrastructure software Practice management support More qualified personnel Use of Software Vendor logo/brand Inclusion of partner solutions in solution finder catalog Additional free online training Additional sales and marketing support	Core product license revenue More qualified implementation personnel Fewer software errors Improved software interoperability Expanded portfolio of partner solutions
Third	Organizational assessment Partner personnel tested/certified	Expanded suite of development tools Licenses for infrastructure software Use of Software Vendor Logo and branding Priority technical support Specialist community access Financing facility	Core product license revenue Subscription revenue
Second	Subscription fees New partner support centers	Development tools Productivity software licenses Online training platform Marketing tools and support Community technical support	Core product license revenue Subscription revenue
First	Community platform Online tools and templates	Access to peer network Access to technical support communities Marketing and sales tools	Core product license revenue

### 3.3.3 Value to Periphery

There are a number of benefits that are consistent across all five levels of partners. These include: access to technical development tools and software libraries, sales and marketing support, status and legitimacy via co-branding, customer service and technical support, improved quality of add-ons and implementation skills, and

customer satisfaction. The benefits accrue to solution partners in increasingly higher levels commensurate with the stricter requirements placed upon the solution providers. While there are certain benefits that are not commensurate for all categories (a financing facility is available for levels 3 and 5), the majority of the benefits are graduated and inclusive; at each level, the quality or degree of the benefit increases (marketing, technical support, software licenses).

#### *3.3.4 Value to Core*

The primary benefit to the core in having a greater number of partners in higher levels is the direct incentive for the partners to sell additional licenses of the core's products. Points are explicitly awarded for increased license revenue for a variety of products. The secondary, but perhaps more important benefits are the indirect network effects of a larger, more vibrant ecosystem of qualified implementation partners and as well as the availability of applications and other subsidiary complements (e.g. training, support, user communities) that render potential value to clients.

#### *3.3.5 Community Mechanisms*

The Software Vendor has also developed a variety of community governance mechanisms to stimulate collaboration among partners in the periphery of the ecosystem with various degrees of intervention of the core. One of the most visible mechanisms created by the core are the international partner meetings that occur in major markets several times a year. These conferences support a variety of activities from technical evangelism to practice management training. In addition to these large social events, extensive p2p technology platforms have been developed to support partner to partner collaboration. The partner web portal currently hosts 22 different community sites based on specific interest in technical topics, political and environmental advocacy relevant to the software ecosystem, and geographic or industry specialization. The sites offer a variety of functionality including web-tv and social networking, as well as the ability to participate in early release projects run by the Software Vendor.

A partner finding platform is also available to complementors, where they can search a directory of several hundred thousand partners who publish profiles on

practice and technical specialties, over 50,000 registered add-on applications, and several thousand broadcast opportunities for collaboration on an existing job or future tender. The typical motivations for partner-partner collaboration include access to specialized skills, building a suite of complementary applications, or expanding geographic reach. For example, a partner with expertise in a particular industry segment may turn to another partner for their expertise in a “horizontal” application such as tax reporting; or they may wish to expand internationally and find a partner in another country who could help localize their vertical application. While the technicalities of partner to partner business relationships will vary from legal region and job profile, the Software Vendor certainly encourages these collaborations (while not directly regulating them), and provides a number of generic best practice templates and tutorials on the commercial structure of such partnerships.

On its home page, the Software Vendor identifies several hundred web sites which are independently maintained and intended for use by partners and customers. The sites include both personal and community pages; are national and international; discuss Software Vendor products in general or are targeted toward specific products; and exist in multiple languages. They provide such services as discussion forums, blogs, white papers, listings of partner solutions (with comments and ratings), job listings, events listings, downloads, code samples, bug reports, tutorials, and advice. In this forum end users are able to share best practices in areas such as partner selection, implementation processes, and ways to minimize total cost of ownership. They may also help each other discover new ways to configure the product which avoid costly customization, as well as ways to alter their business processes to maximize product benefits. Many of these web sites are completely outside of any control of the Software Vendor.

### 3.4 Theory Development

Extant literature on technology platforms and ecosystems assumes a fairly homogeneous ecosystem constituted by: a) a tightly controlled core with some variability; b) a strictly controlled interface to the core; and c) a periphery with high variability and innovation; and d) homogenous rules of conduct and control processes applicable to all partners (Baldwin 2008, Baldwin and Woodard 2010). Our analysis

suggests a more nuanced perspective; technology ecosystems can be highly heterogeneous, where control processes vary considerably based upon the profiles and preferences of the periphery partners. As described, our analysis identified 5 discrete levels available to periphery partners, where each level confers additional benefits to the partners. Access to each level is granted pending specific requirements, but in general terms, higher levels provide additional perceived value to both partner and core, and are associated with a reduction in quality variance via testing of applications or validation of individual skills or organizational competencies. Consequently, a useful metaphor of ecosystem governance may be a solar system, with some periphery partners located close to the core, and some further away. Individual partners may choose to enter closer proximity to the core to obtain perceived benefits and status. However, entrance to a level closer to the core requires the partner to forfeit some degree of freedom, coming under a stronger influence (i.e. control of applications and processes) of the core.

**Finding 3.1a** *Control infrastructures in technology ecosystems can be graduated, with greater value offered to complementors in exchange for submitting to higher levels of control by the core.*

Our analysis identified that in several levels of the graduated control, advancement to the next step is enabled through the acquisition of internal points. Points are awarded for a variety of accomplishments including overall license revenues, validation of individual skills or organizational competencies. However, partners operate in a diverse range of countries and industry sectors, and their activities may include software development, software implementation, training, technical support, or other types of services such as hosting or business process outsourcing. These activities are not mutually exclusive; partners may add competencies over time, with a software development partner electing to implement software, for example. Therefore, since the activities of the partners vary, so must the means of assessing advancement to subsequent certification levels. As a result, control infrastructures must be designed to permit a large variety of feasible avenues towards higher levels of certification.

**Finding 3.1b** *To embrace heterogeneity, technology ecosystems can develop internal currencies to permit: i) common measurement standards to assess*

*heterogeneous accomplishments, ii) multiple paths through higher graduations of recognition, and iii) horizontal mobility through the ecosystem.*

Our analysis also indicated that there are no clear rules dictating if, or when, partners should attempt progression to a subsequent level. Moreover, access to the lowest level ecosystem is essentially open to all with minimal requirements. As such, advancement through levels of control is entirely voluntary. Partners self-select themselves through higher graduations based upon the greater perceived benefits at the subsequent level. It should be noted, however, that it is the responsibility of the core to provide transparency in this process, communicating the benefits of higher levels of status as well as monitoring progress and addressing any problems partners encounter as they advance. New partners, for example, have access to new partner support centers where they are coached on the basics of sales, marketing, and project management, given additional training, and even shadowed on their first implementations by experienced implementation partners. At higher levels, partners have different needs and therefore the Software Vendor encourages partner advancement by providing financial support and assistance in hiring qualified professionals.

**Finding 3.2a** *Technology ecosystem participants self-select themselves through higher levels of control.*

This renders the decision much like a market transaction, where ecosystem partners elect to pursue a more extensive package of benefits for some collateral exchange. For the Software Vendor, the direct goal is additional revenue gained on the sale of product licenses. This is achieved via direct incentives for the partners to sell additional licenses. More importantly, the Software Vendor benefits from the indirect network effects arising from the availability of qualified implementation partners and complements that renders the core's product more attractive to potential clients. In most instances, complementors forfeit some discretion over their own work or complements as they subject themselves to the pre-defined processes, templates or quality requirements mandated by the core. In our sample, complementors make a monetary payment in the form of subscription fees, although this revenue is of minimal significance for the core and likely designed as a filtering and signaling

mechanism. At lower levels, partners are encouraged to pursue development in industry verticals which are of strategic importance to the Software Vendor; in other words, the partners forfeit some discretion over choosing which products to develop and which markets to target. At higher levels, the integration between the Software Vendor and the partner is even closer, with partners required to engage in large projects where the Software Vendor participates directly by providing staff, making key decisions, and monitoring progress.

**Finding 3.2b** *The decision to self-select through higher control levels is similar to a market transaction. Ecosystems participants offer or forfeit something in exchange for some additional value.*

In many cases, the mechanisms that enforce additional control on the ecosystem periphery are indirectly related to the value proposition. For example, access to on-line marketing campaigns or financing facilities helps periphery partners with the business operations, which indirectly supports the sales of additional licenses of the core product. In these instances, the creation and control mechanisms are complementary. However, often the creation and control mechanisms are interdependent. For example, the testing and certification of individual skills, organizational competencies, or the technical compatibility of an application are of direct, simultaneous benefit to both the core and the periphery.

**Finding 3.2c** *Although distinct, creation and control mechanisms should be complementary, and are often interdependent.*

We summarize the positions of Findings 1 and 2 by suggesting that technology ecosystems are composed of four main components: incentives to create, infrastructures to create, incentives to control and infrastructures to control. Descriptions of these mechanisms with supporting findings are presented in table 2 below.

Table 3.2. Incentives and Infrastructures for Creation and Control		
Concept	Definition	Case Data
Incentives to Create	Explicit or implicit incentives for users or organizations to contribute to the ecosystem through innovations	Additional revenue obtained by selling partner solutions (both direct and through other partners) The Software Vendor retains the software license for the core code, while the partners retain the licenses for the partner solutions they create Additional clients and consulting revenue obtained through field of specialization Differentiation of service offerings through partner solutions Improved customer satisfaction through custom-tailored solutions Internal points/currencies to permit multiple paths and embrace heterogeneous accomplishments
Infrastructure to Create	Structures or tools that make it possible for periphery participants to make enhancements to technology controlled by core and create complementary innovations, such as open source code, open APIs, integrated development environments, mash-ups or user tool-kits	Open source-code of core applications / protected source code for partner solutions Education and training Specialized IDEs and development language Ease of customization Tools and templates Conferences On-line search engines to match, partners, business opportunities and applications
Incentives to Control	Perceived additional value obtained by periphery participants (that exceeds perceived cost) for positioning themselves and/or their innovations, through self-selection, under greater influence of the core	Perceived market value obtained through Software Vendor certification Association with Software Vendor brand, co-branding with Software Vendor, status and legitimacy Placement in solutions catalogue and ratings of certified partner solutions Value realized through higher levels of partnership: additional marketing and sales support, technical support, use of official logo, training, dedicated account management, financing facilities
Infrastructure to Control	Processes or structures through which participants self-select, forfeiting degrees of control of own processes or innovation in order to obtain some value endowed through closer proximity to core	Certification of partner solutions Certification of personnel 3 <sup>rd</sup> party verification of solution compatibility Implementation tool Training centers Productivity centers New partner support centers System of internal points to permit multiple graduation paths

Acknowledging that the periphery is very heterogeneous suggests that there may be some internal logic or mechanisms that govern how periphery members co-exist with each other and the core. One body of literature that addresses this is the social ecology literature that argues that specialists can survive on the periphery of an ecosystem via a process called resource partitioning, where generalists and specialists operate in distinct resource spaces (Caroll 1984). If specialists require distinct resources from the core, ecosystem cores can embrace and nourish the periphery as a source of non-competing specialization and symbiosis. However, excessive unorganized growth in the periphery also poses several well-known risks. Extreme heterogeneity in the complements and complementors can lead to fragmentation on a variety of levels. Current and potential adopters of the core platform may have difficulty navigating a portfolio of highly disparate and possibly incompatible complements, resulting in a perceived lack of cohesion between the core and complements, as well as amongst complements. Secondly, the costs of fragmentation may actually be 'real' in the sense that technical compatibility standards are not sufficiently defined and enforced. One of the benefits of tightly controlled ecosystems is the cohesive user experience resulting from highly interoperable complements. In fact, where very high levels of cohesion or integration are needed, research prescribes the use of even stronger governance mechanisms, including vertical integration (Wolter and Veloso 2008). But this challenge does not stop at technical compatibility. Shared competencies, reciprocal exchanges, and norms amongst the members of the periphery also serve to bring greater cohesion to the ecosystem by driving common values and codes of conduct (McKelvey 1982, Astley 1985). Ideally, adoption of the platform core should not be driven by the existence of a single complement, but rather, a portfolio of complements, combined with a liquid pool of qualified technical consultants to maintain and further evolve both core and complement modules. In other terms, the current and future availability of a variety of applications and service resources renders the platform attractive. Access to multiple complements requires both market and community based mechanisms that render a potentially fragmented ecosystem transparent and accessible via common search and transaction norms, and operationally cohesive in implementation and use.



**Finding 3.3a** *Control infrastructures function as search, filtering, and coordination mechanisms to aggregate heterogeneous and specialized contributions into a more cohesive ecosystem.*

Our analysis indicated that access to the Software Vendor's ecosystem at the first level of entry was without any significant requirement (first time partners are required to register and be validated by the Software Vendor). Low barriers to ecosystem entry present challenges to the core. Multiple responses from the Software Vendor consistently indicated that substantial heterogeneity on the periphery often leads to excessive variance in the quality of both complementors and complements. Variable quality poses a risk to the core to the degree that it bears the negative costs of the poor performance of the periphery; association with lower status or poor quality firms can lead to agency costs and a consequent decrease in status a reputation (Li and Rowley 2002, Stuart 2000). Our case findings suggest that this was a very large concern of the Software Vendor. Moreover, any isolated negative quality incidences can have reputation effects and may ultimately damage the overall position of the Software Vendor's platform by encouraging potential adopters to migrate towards competing platforms.

**Finding 3.3b** *Control infrastructures serve to reduce quality variance for both complementors and their complements as they self-select themselves through higher graduations of control.*

Low barriers to ecosystem entry also present challenges to complementors. On the outskirts of the periphery, new entrants can suffer from low status and illegitimacy due to a liability of newness (Stinchcombe 1965). Given a lack of reputation and experience, they can choose to compete directly with incumbents, or attempt to carve a defensible niche and differentiate themselves as specialists in a specific sector. Economic theory argues that uncertainty exists concerning the quality of a firm's products in market exchanges (Akerloff 1970). As such, high status can serve as a signal or proxy of quality to help mitigate the problems of information asymmetry and uncertainty in economic exchanges (Podolny 1994). Hence, a mechanism must be designed to: a) validate the quality of the products, services and organizations on the periphery, and; b) where warranted, transfer the reputation stock to the periphery

partners in a manner that is commensurate with the quality achievement of the complementor's organization or products, yet does not expose the core to excessive risk of reputation deterioration. In this respect, status serves as a currency that the core can award to partners on the periphery via mechanisms of affiliation based upon merit (Castellucci and Ertug, 2010).

Our evidence clearly indicates that status was awarded to periphery partners based on evaluations of performance, achievement or quality. The most obvious mechanism is the graduated certification levels, where higher levels of certification confer greater legitimacy to the complementors. Moreover, co-branding is also a graduated device, where partners with higher certification levels are permitted to use logos and other co-branding tools more liberally than lower level partners. As partners achieve greater certification levels, their overall image often assumes a higher degree of similarity with the core in terms of color, appearance, etc. As mentioned in the analysis, we found several partner applications that were virtually indistinguishable from the core's.

**Finding 3.4** *The ecosystem core confers legitimacy and status to participants and complementors on the periphery in graduated levels. As complementors fulfill the requirements of the higher certification levels and come under greater influence of the core, the core confers upon them greater legitimacy and status.*

The literature suggests that most external innovation ecosystems are characterized by mechanisms derived from both markets and communities (Boudreau and Lakhani 2009). Specifically, market mechanisms such as explicit search and transactional mechanisms make the ecosystem increasingly standardized, accessible, transparent and liquid. However, informal governance norms also support the goal of internal cohesion by reducing fragmentation and cultivating a common community culture. One of the main findings of our research that may stand in contrast to the findings from pure open source communities is the salient concept of *purposeful action by the core, with emergent responses on the periphery*. The core is motivated by an ideal of profit maximization to generate creation and growth in the ecosystem and therefore erects specific mechanisms and infrastructures to achieve this. The core can directly affect incentives and mechanisms that are explicit; that is, it can control the market

based mechanisms. However, the intrinsic, community based norms that emerge around the explicit infrastructures are, to a much greater degree, beyond the direct control of the core. One can think of an artificial coral reef as a metaphor. The architects can place new structures in the ocean floor, but how the sea life congregates to form a sustainable ecosystem is largely an emergent phenomenon which is only partially influenced by the infrastructure designers. One possible consequence of this is that the community norms that emerge may not always be desirable by the core. Small communities that form on the ecosystem periphery may develop intra-group, clan-based loyalties (Ouchi 1980) that supersede any loyalties to the core. We certainly found some evidence of this in our study, where many partners expressed dissatisfaction with some components of the infrastructures, and further shared these opinions on community blogs or web sites not refereed by the core. Implicitly, partners that choose not to pursue higher levels of certification may also do so as a statement of disagreement or discontent with the requirements of the core. They may develop a sustainable niche on the periphery with only partial affiliation with the core, and develop stronger loyalties towards similar sub-communities, or alternatively, competing platforms. Similar to open source communities, there is no requirement that participation in a for-profit technology ecosystem is exclusive, although this obviously does happen in some licensing agreements, or may result as a natural consequence of developing critical mass as a complementor. As such, the ecosystem designer enacts market based mechanisms and infrastructures to frame and guide the dynamics of the ecosystem. Around these infrastructures, they hope that community based norms will emerge to provide intrinsic incentives and a strong communal culture which reinforce goals of cohesion, accessibility and integration across a heterogeneous periphery. However, it is important to note that: a) community responses may not emerge; b) they may emerge, but not always in a form desirable by the core, and; c) complementors on the periphery may have partial loyalties to the core, participate in multiple competing platforms, and arbitrage the contributions of one ecosystem across others.

**Finding 3.5** *Technology ecosystem cores can purposefully construct infrastructures and explicit market based mechanisms with the desire that intrinsic community based norms and competencies emerge as a result.*

Although it is beyond the scope of this manuscript, an interesting topic for future research is how ecosystems contend with conflict, discontent or undesired behaviours of the participants. Clearly the control infrastructures we have described are intended to control the most central work processes. However, as mentioned above, there will be cases of those complementors who do not adopt the control processes, as well as other forms unforeseen behaviours that can emerge in an ungoverned community.

### 3.5 Limitations and Future Research

As in all inductive studies, the traditional caveats of case-based theory development apply. While we are confident that the insights of this analysis are valid for this case, validation of the Findings across other forms of technology ecosystems is pending. Clearly, one would expect that the underlying economics of the specific business will dictate the structure and dynamics of the ecosystem and some variance is to be expected. Our analysis was based upon a provider of business software. It is feasible that an ecosystem operating in, say, consumer markets, may exhibit different dynamics. As such, a feasible path for future research could include validation across a number of vendors of business software, and, thereafter, increasing the heterogeneity of the core product across industrial and consumer sectors.

Our theory relies upon population ecology which has been criticized for being excessively deterministic, ignoring the role of managerial agency and free will that would be salient in a more voluntaristic model (Astley & Van de Ven 1983, Singh and Lumsden 1990). By explicitly modelling self-selection, our framework partially avoids this criticism. Specifically, we acknowledge the role of managerial decision and agency in choosing the level of proximity to the ecosystem core.

The concept of internal currencies used to negotiate numerous paths to higher status levels is not unlike educational systems with its system of standard degrees and academic credits. Clearly, the literature of mechanism design in educational institutions may have value for further theory development in technology ecosystems. However, one major caveat is worth noting. Most educational institutions teach for generalizable and universally applicable knowledge. This is not the case for our for-profit ecosystem, which have a clear economic incentive to lock participants into their

platform. Switching costs can be erected in a variety of ways, including introducing a high level of proprietary, platform specific knowledge into the ecosystem.

As mentioned in the discussion, it is often assumed that the for-profit motive of ecosystem participants moderates behavior, and all emergent community-based phenomenon are desirable by the core. This may not be the case. We assume that all action by the core achieves the desired results. However, research on platforms and technology ecosystems has paid less attention towards how the core might contend with unsuccessful mechanism design, deviant or undesirable conduct, although some literature exists on how on-line communities govern this (Chua et al. 2007).

As a final consideration, one specific concern of our focal platform was the distribution of complementors. In some specializations or markets there was an abundance of complementors, whereas in others there was a lack thereof, with oligopoly-like structures emerging. How the platform can influence this distribution of complementors is also a topic of interest for future research.

### 3.6 Conclusion

Our analysis is based upon an in-depth study of a major software vendor and its technology ecosystem in the business software segment. The main results and Findings are summarized in table 3 below.

**Table 3.3. Summary of Research Results**

<b>Research Question</b>	<b>Results</b>	<b>Relevant Findings</b>
<p><b>RQ 3.1</b> What are the primary platform mechanisms required for the coordination and control of technology ecosystems?</p>	<p>Technology ecosystems are built around explicit market-based mechanisms enacted by the ecosystem core based upon incentives for self-selected participation. These include infrastructures or tools that facilitate creative activity by complementors in the periphery of the ecosystem. Ecosystem architects desire a vibrant portfolio of complements that serve specialized niches that would be outside of the capabilities of a generalized core, but offer potential value to clients and encourage adoption of core platform.</p> <p>Infrastructures for creative activity also embed complementary or interdependent control processes that reduce quality variance and provide search and coordination mechanisms to bring greater cohesion to a heterogeneous, evolving portfolio of complements.</p> <p>Around the infrastructures, community based phenomenon may emerge that may provide further cohesion via common norms or an ecosystem culture. While the core will attempt to influence community phenomenon to their benefit, it lies outside of their direct control, and is further subject to the divergent interests of its members.</p>	<p><b>Finding 3.5</b> Technology ecosystem cores can purposefully construct infrastructures and explicit market based mechanisms with the desire that intrinsic community based norms and competencies emerge as a result.</p> <p><b>Finding 3.3a</b> Control infrastructures function as search, filtering, and coordination mechanisms to aggregate heterogeneous and specialized contributions into a more cohesive platform.</p> <p><b>Finding 3.3b</b> Control infrastructures serve to reduce quality variance for both complementors and their complements as they self-select themselves through higher graduations of control.</p>

<p><b>RQ 3.2</b> How do platform mechanisms interact to foster creativity and innovation, and ensure value appropriation and control in technology ecosystems?</p>	<p>The infrastructure of our technology ecosystem had five graduated levels. The decision to pursue certification at a higher level by a complementor is similar to a market transaction, ecosystem participants offer something in exchange for some perceived benefit. As an example, the use of tools or templates that impart higher quality to the processes or final product of the complementor or client. In exchange for higher quality, the complementor forfeits some freedom over the development or implementation process by subjecting it to the tool.</p> <p>Each graduated certification must offer an attractive bundle of benefits to the complementor if they are to pursue it. In general terms, these are operational improvements (development, implementation, financing), marketing support or increased legitimacy. Likewise, having complementors pursue higher certification also confers commensurate benefits to the core. These included increased software license revenue of core products, as well as the indirect network effects of having a larger, more qualified ecosystem of complementors and complements that add potential value to the core product and therefore increase its adoption by end-users.</p> <p>The requirements and benefits to both periphery and core are summarized in table 1. That benefits simultaneously accrue to both the periphery and core suggest that the creation and control infrastructures must be complementary, but are often completely interdependent.</p>	<p><b>Finding 3.2a</b> Technology ecosystem participants self-select themselves through higher levels of control.</p> <p><b>Finding 3.2b</b> The decision to self-select through higher control levels is similar to a market transaction. Ecosystems participants offer or forfeit something in exchange for some additional value.</p> <p><b>Finding 3.2c</b> Although distinct, creation and control mechanisms should be complementary, and are often interdependent.</p>
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<p><b>RQ 3.3</b> How do incentive and control mechanisms accommodate ecosystem heterogeneity?</p>	<p>Our focal technology ecosystem created a certification structure with five discrete, graduated levels. Pursuit of higher levels of certification is voluntary; that is, a complementor may enter the periphery at the lowest level and remain there, or they may pursue higher ones based upon their profiles, preferences and capabilities.</p> <p>Advancement to higher certification levels is in several cases permitted by the acquisition of internal points which can be acquired through a wide variety of accomplishments. These include operational goals such as selling a specific quantity of the core’s licenses, individual skill certifications, or organizational competency profiles. This standard currency permits multiple paths towards higher graduations for partner organizations as well as horizontal mobility for individuals throughout the ecosystem.</p> <p>As entry in to the periphery of the ecosystem has few formal requirements, new entrants must compete with established partners with strong reputations. Via advancement to higher graduations of certification, they can obtain greater legitimacy and status as bestowed by the core.</p>	<p><b>Finding 3.1a</b> Control infrastructures in technology ecosystems can be graduated, with greater value offered to complementors in exchange for submitting to higher levels of control by the core.</p> <p><b>Finding 3.1b</b> To embrace heterogeneity, technology ecosystems can develop internal currencies to permit: i) common measurement standards to assess heterogeneous accomplishments, ii) multiple paths through higher graduations of certification, and iii) horizontal mobility through the ecosystem.</p> <p><b>Finding 3.4</b> The ecosystem core confers legitimacy and status to participants and complementors on the periphery in graduated levels. As complementors fulfil the requirements of the higher certification levels and come under greater influence of the core, the core confers upon them greater legitimacy and status.</p>
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Our study and subsequent theorizing are novel on a variety of levels. First, where a number of studies of open source movements exist that explore their community dynamics and intrinsic motivations, less empirical research has analyzed for-profit technology platforms and ecosystems where market mechanisms are explicit and



governed by a profit seeking core, and economic incentives that are also prominent amongst the periphery of complementors. Second, we pay specific attention to the problems of coordination and control which have also been underserved in the literature. Third, we identify the important role of heterogeneity in ecosystems, as well as how governance mechanisms can be designed to accommodate a heterogeneous periphery through standardized currencies, graduated status and legitimacy, multiple advancement paths and horizontal mobility throughout the ecosystem. Finally, we examine the role of ecosystem infrastructures in increasing cohesion through a portfolio of fragmented complementors, and explore how community-based norms can follow from - and complement - the market based infrastructures to further advance such cohesion.

## 4 RATIONALIZATION OF EMPIRICAL ANALYSIS AND THEORY DEVELOPMENT

### 4.1 Introduction

This thesis includes two distinct empirical studies. In the first (chapter 2), the classical theories of transaction cost economics and agency theory are applied to the domain of affiliate marketing. In the second study (chapter 3), the emerging theories of ecosystems and platforms are applied to a business software domain, which is characterized as a technology ecosystem consisting of a strong, profit-seeking firm at the core and many surrounding entities which both depend on the core, and contribute to the overall ecosystem's development. While the first study is primarily an application of extant theory (transaction cost economics and agency theory) to a novel domain which has been understudied to date (and also includes a significant normative component), the second study applies an inductive treatment to a particular domain, and incorporates significant theory development in a relatively new area of theoretical discourse: ecosystems and platforms. What both studies have in common principally is the objective of explaining the organization and control of each domain, what has been traditionally defined as governance, or "a multidimensional phenomenon, encompassing the initiation, termination and ongoing relationship maintenance between a set of parties" (Heide, 1994, p. 72).

The dominant theory for studying governance in prior literature has been transaction cost economics (Coase 1937, Williamson 1975). The original goal of TCE is to explain a firm's choice between two governance *forms*: markets and hierarchies. Analysis in TCE focuses on the attributes of a transaction that determine variations in its costs, and which consequently may be used to determine the most appropriate governance form. Three major characteristics of transactions are germane to the determination of the appropriate organizational form in TCE: asset specificity, exchange uncertainty, and transaction frequency (Williamson 1985). An analysis of the levels of each of these characteristics suggests the most appropriate governance form for a given domain. Williamson (1991) later added the possibility of hybrid forms,

which he defined to include “various forms of long-term contracting, reciprocal trading, regulation, franchising, and the like” (p. 280). In chapter 1, we have also discussed other efforts in the literature to classify and analyze these intermediate forms as networks (Jarillo 1988, Powell 1990, Thorelli 1986).

At several points in this thesis we have suggested that the choice of a governance form does not adequately address the issue of how firms may govern a heterogeneous network of partners. The election of a particular governance form, whether hierarchy, market, or hybrid/network, is merely the first step, as there are an infinite number of ways to organize these relationships within each governance form. More recent developments of transaction cost theory have focused on governance *mechanisms* as a more detailed assessment of the inner workings of the hybrid form. Wathne and Heide (2000) research a range of alternative governance mechanisms which form the primary theoretical basis for the analysis in chapter 2, and in chapter 3 we likewise identify several governance mechanisms at work in the Business Software ecosystem (figure 3.1). Nevertheless, in the Wathne and Heide paper, the authors criticize the ad hoc nature of what they also term “control mechanisms”, and the need for a systematic study of their interdependencies and antecedents, grouping the mechanisms into three approaches to control: partner selection, incentive design, and monitoring.

While attempts of this kind to create a taxonomy of governance mechanisms may help to better organize the field, the issue remains that agency theory and transaction cost economics “view relationship management as a problem of deploying control mechanisms to manage partner opportunism, with the overall goal of minimizing governance costs” (Stump and Heide 1996, p. 431). In this thesis, particularly in chapter 3, we have taken the position that identifying the many governance mechanisms at work should be followed by a deeper analysis of ecosystem dynamics.

Chapter 3 focuses on two alternative theories for understanding the organization of interfirm relationships: platforms and ecosystems. These theory bases complement TCE theory in that they focus on a particular type of hybrid/network governance form, which may resist the generalities applied to hybrid/network forms.

Unlike TCE, which tends to take a dyadic approach to transactions between two (or more) firms, ecosystem and platform theories apply a more holistic view of the activity between multiple firms. The perspective in both cases is primarily from the perspective of the core firm, also known as the keystone firm in ecosystem theory, though the role of complementors or niche players is also deemed critical to the growth and overall health of the ecosystem. In addition, theory on ecosystems and platforms focus on how to manage a platform/ecosystem in order to maximize value creation and appropriation, a concept which is not prevalent in TCE. In chapter 3, we have studied one domain in detail (business software) in order to describe observations which we hope will extend the existing theory base of platforms/ecosystems.

The motivation for the research in chapter 3 is based on certain empirical observations which we do not believe have been satisfactorily addressed by prior research. First, there is the critical tension between creation and control. Studies of ecosystems and platforms to date have tended to focus more on value creation, and hence there is a need for more research on governance and control mechanisms. In addition, prior research tends to view ecosystems as homogenous, in that governance mechanisms may be created unilaterally by the core and applied to all parties equally. In contrast, we have observed a tremendous amount of heterogeneity in the types of partners and economic activity in our domains, requiring a greater degree of flexibility in the initial design and evolution of creation and control mechanisms.

At this point in the thesis, we have applied TCE to one type of ecosystem in the affiliate marketing domain, and applied ecosystems and platforms theory to a separate platform in the enterprise software sector. Both domains in this thesis may be considered ecosystems, since both revolve around keystones which make platform decisions and guide overall ecosystem development, but are dependent on the contributions of other participants who expand the core offerings and create diversity. However, the two domains have significant differences, as the Business Software ecosystem in the second study is based around a single core firm, while the affiliate marketing ecosystem is more fragmented, with multiple platforms, none of which has dominant market share.

Our objectives at this point are to explore the value and limitations of TCE in explaining observed phenomena in our two domains; to examine how theory on ecosystems and platforms may complement TCE based on our research findings; and to suggest avenues for future research. Therefore, we will now undertake a more uniform application of TCE to both domains studied, and an exploration of the similarities and differences in both theory and domain in the two studies as a means of further rationalizing the theory development exercise begun in chapters 2 and 3. Next, we engage in an analysis of how theory on platforms and ecosystems may complement TCE. Finally, we discuss additional observations which have not been adequately addressed by existing theory on platforms and ecosystems. In section 4.5 we introduce theory from the paradox literature, suggest two additional tensions, and provide additional observations from the Business Software ecosystem.

Accordingly, our research questions are the following:

**RQ 4.1:** What aspects of ecosystems/platforms as a new organizational form are explained by transaction cost economics and agency theory?

**RQ 4.2:** What additional explanatory value is provided by platform/ecosystem theory?

**RQ 4.3:** What additional conceptual development is needed?

#### 4.2 Analysis of Strong Core and Fragmented Ecosystems along TCE Dimensions

We address research question 4.1 by applying the primary dimensions of transaction cost analysis to each of the two domains explored in this thesis, the fragmented affiliate marketing ecosystem with multiple platforms, and the platform-centric business software ecosystem with activity revolving around a single, dominant core firm. The dimensions used in the analysis include the primary constructs from transaction cost economics (asset specificity, transaction frequency, and environmental and behavioral uncertainty). The table below summarizes our assessment of each domain for each of the four primary constructs:

<b>Table 4.1: Comparison of strong core and fragmented ecosystems along TCE dimensions – Valuations</b>		
Dimension	Strong core (Business Software)	Fragmented (Affiliate Marketing)
Asset specificity	Varies	Low to Moderate
Transaction frequency	Varies	Varies (Low to Moderate)
Environmental uncertainty	Medium to High	High
Behavioral uncertainty	Medium to High	High

The remainder of this section will have the following structure:

<b>Table 4.2: Comparison of strong core and fragmented ecosystems along TCE dimensions – Analysis</b>		
Dimension	Strong core (Business Software)	Fragmented (Affiliate Marketing)
Asset specificity	Section 4.2.1	Section 4.2.2
Transaction frequency	Section 4.2.1	Section 4.2.2
Environmental uncertainty	Section 4.2.3	Section 4.2.4
Behavioral uncertainty	Section 4.2.3	Section 4.2.4

#### *4.2.1 Asset specificity and transaction frequency: Business Software*

The first key dimension in transaction cost economics is asset specificity, or the degree to which assets developed for a particular relationship are limited outside of that relationship. When asset specificity is high, the resulting lock-in could result in a possible “hold-up” of one or both parties. In the Business Software ecosystem, partners develop idiosyncratic assets specific to that software platform in the form of software complements, certifications of both personnel and software solutions, skills obtained through training and experience in software development and implementations, etc. These assets retain little value outside of this relationship since software solutions are based on proprietary standards, and certifications are specific to particular software. Therefore, the possibility of a hold-up problem does exist in this case.

This situation is exacerbated by the fact that investments in relationship-specific assets are made primarily by the periphery participants and not by the core. The Software Manufacturer must invest in developing the core software product,

creating software development kits, maintaining the software implementation methodology, maintaining the software roadmap, etc. However, these are infrastructure elements common to all partners, and thus easily redeployed if a particular partner leaves the relationship.

Nevertheless, we must also take into account the level of control to which partners self-select. At higher levels, there is also a corresponding higher investment by the partner in the relationship, since the asset-specific investments identified earlier (i.e. software solution development, software and personnel certification, advanced training) tend to occur at higher levels of control. At higher levels, there is also greater investment by the core in relationship-specific assets in the form of offering training, dedicated customer support, co-marketing and co-branding campaigns, and potentially co-development of products and services. When partners self-select to higher levels of control, this hybrid organizational form shows greater levels of inter-firm integration due to higher levels of co-investment in relationship-specific assets. Therefore, while the hold-up problem seems to exist at lower levels of control, at higher levels there appears to be less risk of a hold-up problem as both parties make investments in relationship-specific assets.

Transaction frequency complements asset frequency in that when both asset specificity and transaction frequency are high, the tendency is toward a more closely integrated governance form (Stuckey and White 1993). In the case of the Business Software ecosystem, we have identified annual license sales as the proxy for transactions. Partners with high transaction frequency will tend to self-select into higher levels of control, while those with lower transaction frequency correlate with lower levels of control. This is due to the fact that while partners are given the choice of whether or not to participate in higher partnership levels, each successive level has higher requisites in terms of annual license sales. And, as detailed in the prior chapter, higher partnership levels provide greater incentives and access to valuable infrastructure mechanisms provided by the Software Vendor. In other words, partners with low asset specificity and low transaction frequency will tend to elect lower levels of control, while those with higher asset specificity and higher transaction frequency tend towards higher levels of control (and integration between the parties). Therefore,

while the Software Vendor creates incentives to encourage partners to choose higher levels of control, the choice of the level of investment in relationship-specific activities, the level of transaction activity, and the consequent choice of control level remain with the partner.

#### *4.2.2 Asset specificity and transaction frequency: Affiliate Marketing*

In analyzing asset specificity and transaction frequency in the Affiliate Marketing ecosystem, one important aspect to consider is its fragmented nature, where no individual platform (primarily affiliate networks, though some large merchants like Amazon or eBay manage their own affiliate platforms) has dominant market share. Affiliates choose merchants (and by extension affiliate networks) based on their commission structure, the tools they offer, their brand recognition, and the niche in which they operate (AffStat 2009, PartnerCentric 2006). In a 2009 survey of over 450 affiliates by AffStat, 41% of respondents said they represented more than 21 merchant programs, and 30% represent 51 or more programs.

Wareham (2003) observed that information and communications technologies have the potential to reduce asset specificity through, for example, common and open standards: “Where investments in computer hardware, telecommunications infrastructure and training certainly represent up-front investments, applications are increasingly becoming more open and amenable to redeployment in other environments at minimal cost, if not conceived for multiple deployments from design” (p. 337). Therefore, an important factor in affiliate marketing which reduces asset specificity is that many of the tools provided by merchants are based on open standards including HTML, Javascript, iframes, XML and CSV, and banner sizes.

However, in affiliate marketing some tools, such as application programming interfaces (api’s), require more integration and higher relationship-specific investments on the part of the affiliates. API’s allow affiliates to import robust content from merchants into the affiliate’s site. API’s are best used for information which changes frequently (such as flight and hotel rates and availability), and updates are provided in real-time. Therefore, in most cases asset specificity is low in the Affiliate Marketing ecosystem, but for affiliates who use api’s it may be moderate to high.



In the Affiliate Marketing ecosystem, incentives focus primarily on transaction frequency, with commissions based on visitors referred, leads, and sales, or some combination of the three. In Spain, these incentives can be classified into five basic commission pricing models, which are chosen depending on the program objectives of each merchant (see table 2.6 for details). Therefore, the nature of transactions in affiliate marketing depends on conditions set by each merchant.

As described in section 2.4.3, many merchants offer different commission levels depending on the number of transactions an affiliate generates, with promotions based on superior performance and demotions based on inferior performance. The number of transactions required to reach the next level is generally shared with the affiliates, though not always, and affiliates who achieve superior performance (primarily through higher transaction frequency) may renegotiate their agreement from a one-to-many arrangement (covered by a standard agreement applied to the majority of affiliates) to a one-to-one (where the terms and conditions apply to the individual merchant-affiliate arrangement). The advantages of higher levels of integration with a given platform are primarily outcome-based in the form of higher commissions and bonuses. In our analysis, we have assumed low to moderate transaction frequency, since our sample is based on affiliates under a one-to-many arrangement. Affiliates with higher transaction frequency might achieve higher bargaining power and negotiate a more favorable one-to-one contract. Consequently, consistent with transaction cost economics theory, the low to moderate asset specificity in the Affiliate Marketing ecosystem combined with low to moderate transaction frequency would tend towards using more market-based mechanisms to govern the relationship. Those with higher asset specificity (more extensive use of api's), and higher transaction frequency would indicate a closer (more vertical) relationship between the parties.

#### *4.2.3 Uncertainty: Business Software*

As summarized by Rindfleisch and Heide (1997), there are two types of uncertainty: environmental uncertainty, where the context of the exchange is difficult to identify ex-ante; and behavioral uncertainty, where performance is difficult to verify. The main issue with high environmental uncertainty is an adaptation problem, where it is

difficult to modify contracts in reaction to changing circumstances. High behavioral uncertainty may lead to a performance evaluation problem, where it is difficult to establish whether an exchange partner is in compliance with contract terms.

A critical issue in all ecosystems is the portion of overall value creation which will be retained by each contributor, and this is directly determined by incentives, both financial and behavioral, included as part of the contracts (whether formal or relational). In other words, first we must determine what is meant by “performance” prior to assessing whether exchange partners are in compliance. In the case of the Business Software ecosystem, partners are measured based on their ability to generate license sales of the core product, and revenues from license sales are divided between the Software Vendor and the partner. However, there is medium to high environmental uncertainty in this domain since customers have specialized needs. Partners become experts in particular sectors according to their ability to identify these particular needs, and offer solutions which meet these needs. Each client implementation of the software tends to require some degree of customization, and partners may also offer their own partner solutions (complements to the core software solution). The partner retains all revenues related to customization and partner solution sales. Therefore, while there is high environmental uncertainty related to the specific needs of the customer, this is treated as outside of the scope of the core-partner relationship. By solely focusing on sales of the core software product and leaving the remaining issues to the partner, the Software Vendor greatly simplifies the contracting environment, albeit at the cost of abandoning a share of other revenue. As a result, behavioral uncertainty is greatly reduced since performance is limited to assessing license sales.

However, these decisions have consequences. First, as mentioned above, the core forfeits any share of revenues from other sources besides license sales. Second, critical performance issues are left outside of the scope of the Software Vendor-partner relationship, such as whether a software implementation is successful in terms of providing a solution to the customer’s requirements on time and on budget, the quality of training and technical support provided, ongoing maintenance, etc. An important consideration is that if the partner performs poorly in those areas left

outside of the scope of the Software Vendor-partner contract, they reflect poorly not only on the partner but on the core firm as well.

TCE proposes vertical integration as the preferred governance form when uncertainty and transaction frequency are high as the solution to incomplete contracts. This is not a practical option in this situation since partners choose to operate independently from the core firm. As discussed earlier, Williamson has broadly proposed the selection of hybrid governance forms as a solution to this dilemma. However, as mentioned in the introduction, simply choosing a hybrid governance form does not completely address this issue since there are an infinite number of ways to configure this relationship. More recent developments of transaction cost theory have focused on governance mechanisms as a more detailed assessment of the inner workings of the hybrid form. In fact, our study of the Affiliate Marketing ecosystem has the explicit objective of analyzing the application of the governance mechanisms of partner selection, incentives, and monitoring as complements to the primary mechanism of formal contracts.

#### 4.2.4 *Uncertainty: Affiliate Marketing*

Similar to the Business Software context, in Affiliate Marketing performance is defined based on the number of transactions completed (which may be sales, leads, clicks or some combination depending on the commission structure for each program). In addition, many programs specify rules governing email marketing, privacy policies, search engine marketing, and the use of merchant trademarks (see section 2.4.1 for more detail). Nevertheless, we have identified environmental uncertainty as high due to the extreme information asymmetry in the channel. Similar to the Business Software context, performance in the formal contract is defined in terms of transactions, yet *how* affiliates achieve these transactions is not given sufficient focus.

Table 2.1 summarizes the biggest challenges in managing affiliate programs according to merchants, with approximately 50% of the concerns related to properly managing affiliates, fraud and monitoring for trademark infringement and brand risks. Chapter 2 explores this issue in more detail, with the conclusion that while there are some limitations in formal contracts regarding the use of trademarks and merchant brands, there are little or no explicit guidelines related to areas where affiliates have a

significant degree of independence (such as the content of advertisements or the use of email), thus increasing the importance of the other governance measures.

Behavioral uncertainty in the Affiliate Marketing ecosystem is likewise identified as high. Again, similar to the Business Software ecosystem, performance is defined in terms of transactions, and requirements for affiliate behavior are generally not given considerable attention in the formal contract. The check for behavioral uncertainty is through monitoring mechanisms, and in chapter 2 we analyzed the sample for both outcome-based and behavior-based monitoring. We conclude that monitoring of outcomes is generally effective in identifying the number of transactions completed. However behavior-based monitoring is affected to a greater extent by information asymmetry, and while merchants perform random checks on affiliate web sites, and monitor their own brand and trademarks in search engines, efforts are typically nonsystematic.

Therefore, high environmental uncertainty and high behavioral uncertainty in the Affiliate Marketing context result in both difficulty in crafting effective contracts, and difficulty in monitoring behavior. The measures used to address these issues as observed in our study in chapter 2 primarily focus on reducing affiliate commission levels or cancelling an affiliate's contract when infractions are observed. In addition, the actions taken by the merchant depend in large part on the transaction frequency of an affiliate; those with a high transaction frequency are given greater attention, are promoted to higher commission levels, and may even negotiate a specialized contract between the parties. Affiliates with low transaction frequency are given far less attention. Merchants monitor changes in transaction frequency closely, since a sudden and dramatic increase in performance may be an indicator of fraud.

#### 4.3 Theory Development

Based on the analysis in the prior section, we may reach several conclusions regarding the value of transaction cost economics in providing insights to our two chosen domains. First, TCE is generally effective in addressing the broad issue of determining the most effective governance form for a dyadic relationship. The theory has explanatory value regarding issues of hold-up costs and partner lock-in, the

completeness of contracts, and the difficulty of monitoring exchange behavior. When considering the relationship between the core firm and an ecosystem participant, our analysis has generally pointed towards a hybrid or network form based on the guidelines provided in the theory.

### **Choice of Governance Form**

The principal objectives behind analyzing a domain along the four dimensions of TCE are either explanatory - to explain why different governance forms exist; or prescriptive - to choose the appropriate governance form given the particular characteristics of that domain. Our analysis would suggest that TCE is perhaps more effective as an explanatory theory, where the four factors serve as a lens through which to evaluate the appropriateness of the previously chosen governance form. First, TCE excludes key characteristics which determine the governance form such as the independent agency of the parties (we have discussed how partners self-select the program level in both ecosystems – see Findings 3.2a and 3.2b), value creation, and innovation. Islamoglu and Liebenau (2007), citing prior literature, suggest that while TCE may have explanatory value for exchange behavior resulting from efficiency considerations, it excludes factors related to power and the behavioral characteristics of exchange participants such as issues of consensus and cooperation. In chapter 1, we provide examples from the literature on motives for choosing hybrid or network forms of governance (for example, Ebbers 1999). While this review is not intended to be comprehensive, it does illustrate that firms may choose their governance form based on factors other than those proposed by TCE.

Moreover, we should address the adequacy of transaction cost theory for completing its principal objective: explaining the most appropriate governance form for an exchange relationship. In their research of multinational firms, Hwang and Gaur (2009) argue that the choice of organizational mode is not a “make-buy” decision as classically posited, but rather a “make-cooperate-or-buy” decision. Consequently, while the initial transaction cost analysis framework focused on this choice between two forms of organization, more recent updates acknowledge that “the features of internal organization can be achieved without ownership or complete vertical integration” (Rindsfleisch and Heide 1997, p. 32), but also through hybrid *mechanisms*.

As opposed to the choice of organizational *form*, which has traditionally been viewed as a “make-or-buy” decision, this use of governance mechanisms applies where the choice of a hybrid organizational form is considered to be ex-ante.

In a similar vein, Santos and Eisenhardt (2005) claim that an important limitation of TCE is that the direction of causality is not clear, and that certain factors such as asset specificity may be the *result* of governance form choice. In our two domains, we have observed that the levels of at least some of these factors may be determined by the choice of governance form, and not vice versa. For example, partners in the enterprise software ecosystem may self-select a higher level in the ecosystem. As a result, the partner will make greater investments in marketing, training, software development, etc. associated with the software product. In addition, at this higher level, the Software Vendor makes corresponding investments in co-marketing, training, sales support, etc. which are specific to that relationship. In other words, the higher level of asset intensity is due at least in part to the higher partnership level, not vice versa. A similar phenomenon occurs in the Affiliate Marketing ecosystem, where higher level affiliates in a given merchant program receive higher commissions, and as a result will make higher asset-specific investments in marketing that merchant. Therefore, we suggest the following as a result of our analysis:

**Finding 4.1:** TCE has explanatory value for the choice of a hybrid/network governance form, but excludes many of the key factors which determine (and result from) this choice; the levels of some factors may be the result of the choice of governance form, not vice versa.

### **Solar System Model**

While we have observed that TCE offers certain explanatory value for a particular dyadic relationship, we immediately run into a level of analysis problem, as the goal of our research is not to consider how the core firms may structure relationships with a single trading partner. Transaction cost economics reduces the scope of analysis to that of a series of exchanges between two firms. These exchanges may take the form of hierarchy or market at either extreme, but may also take on an intermediary, or hybrid form. Many studies have visualized this choice of governance

form as a continuum, and a particular arrangement may be classified along this continuum based on the degree of intensity of each of the three primary TCE factors (asset specificity, transaction frequency, and uncertainty). This is the exchange view, or “linear” model. Since a key premise in this thesis is that ecosystems/platforms represent a governance form which deserves special consideration due to its particular characteristics, we should then ask how these forms might be different from the contexts in which TCE has been applied previously.

Rindfleisch and Heide (1997) survey 45 empirical studies from the literature and found TCE applied to vertical integration decisions to move either forward into distribution and sales, or backward into production inputs; outsourcing decisions; vertical interorganizational relationships in lieu of ownership; and horizontal interorganizational relationships such as co-marketing. Outsourcing decisions fit well with the linear model since they generally represent a single make-or-buy decision for a particular functional activity such as information systems, human resources, manufacturing, etc. While vertical integration issues often involve multiple trading partners, the similarity of the activities (sales, distribution, etc.) under consideration allows for extrapolation of the governance form decision to all potential parties. In other words, these are generally homogeneous activities. Vertical and horizontal interorganizational relationships make similar assumptions about the trading partners, the main difference being that the hierarchical relationship is achieved through formal and relational contracts rather than through integration into a single firm.

As mentioned above, the bulk of the empirical research on TCE seems to assume either a dyadic relationship, or a relationship with multiple, *similar* trading partners. In either case, there is a single consideration of the appropriate governance form for all parties. In our observations, rather, the issue is how a core firm may design a broader program which incentivizes multiple, *heterogeneous* exchange partners to engage in economic activity around the core firm’s products and services, while maintaining a degree of control. When we take this macro view, we have observed core firms creating *multiple, distinct hybrid forms for the same economic activity*. Looking at the ecosystem from the perspective of the ecosystem core, the issue of creating a model which accommodates a heterogeneous set of trading partners and

types of activities becomes more complex. Neither is the organizational model static, since the portfolio of partners and complements tends to evolve over time, requiring core mechanisms to evolve as well in order to maintain balance.

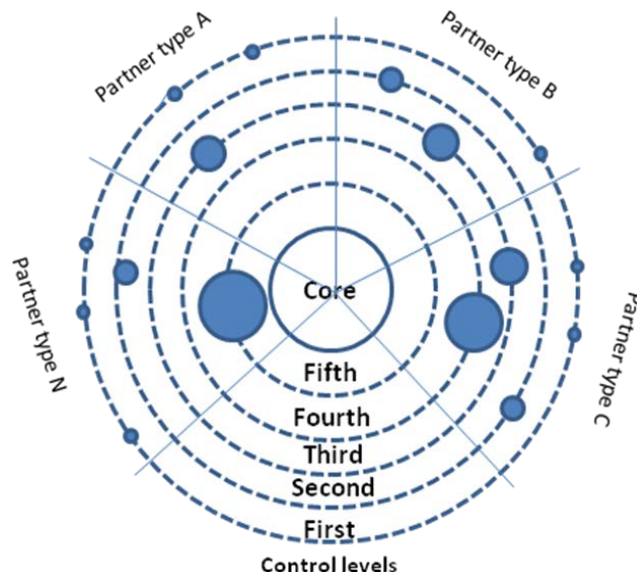
Of course, the body of research on TCE has embraced organizational forms which go beyond simple, dyadic relationships. We have discussed various examples in the literature on inter-firm networks and hybrid forms, and have found key differences in the assumptions regarding the orchestration of the models. While networks presume coordination between firms and generally suggest a shared governance structure, ecosystems and platforms assume the presence of a keystone or platform leader responsible for the creation and evolution of the core platform, linkages between the core and complements, and general rule-setting for participation in the ecosystem. One explanation for this difference is that one stream of literature in organizational theory (Thorelli 1986, Jarillo 1988, Powell 1990) has tended to classify all intermediary organizational forms between pure markets and hierarchies as networks, a broad classification for relationships between two or more firms. However, we believe that one type of network, ecosystems, has particular characteristics which merit separate consideration. Consequently, we propose the following:

**Finding 4.2:** In contrast with a dyadic focus on each inter-firm relationship individually, core firms in an ecosystem manage their relationships with multiple, heterogeneous partners through a coordinated portfolio of distinct relationship types which correspond to the various partner roles, and which may be graduated in nature.

Throughout this thesis we build on ecosystems/platforms as an alternative view of inter-organizational relationships focusing on the role of a core firm in creating a platform and orchestrating creation and control mechanisms to encourage participation by third parties. We refer to this view as the “solar system” model, shown below in Figure 4.1.



Figure 4.1: Solar system model



In the solar system model, the core firm must manage a coordinated portfolio of arrangements with other ecosystem participants, called niche players in the ecosystem literature (Iansiti and Levien 2004a, 2004b), or complementors in the platform literature (Baldwin and Woodard 2010, Boudreau and Hagiu 2009). An ecosystem may support hundreds, thousands, or even millions of participants. It would therefore be impractical to treat each relationship individually. Instead, firms must create a program of relationship types, which may be graduated. Firms also must consider different types of programs depending on the type of partner in the ecosystem, and the optimal control structure would reflect this heterogeneity.

### Heterogeneity

Since it represents such a key point of differentiation from the network/hybrid view, we should address the issue of what we mean by heterogeneity in the context of our two ecosystems. Certainly, we have found differences in the size of ecosystem participants in terms of the volume of transactions, annual revenues, number of employees, etc. In the enterprise software ecosystem, one key difference among partners is the software packages supported; the Software Vendor offers four separate packages targeting different needs of small and midsize firms, and the modular nature of the software means that partners can become specialists in particular modules such as customer relationship management or supply chain management. Furthermore,

partners may engage in different roles, such as software development, sales and installation, training, or technical support. Partners may focus on a single role, or may develop competencies in multiple roles. Finally, partners may specialize in one or more industry sectors, and may focus on a local, national, or international market.

We illustrate this heterogeneity for the Business Software ecosystem in Table 4.3 below, which depicts possible activities and domains. Complementors can have a combination of geographical focus, functional focus, or specific expertise of an industrial sector, and perform support, training, implementations, and add-on development across these domains.

<b>Domain</b>  <b>Activity</b>	<b>Geographic</b> (National, regional, international)	<b>Functional</b> (SW package, accounting and finance, manufacturing, HR, CRM, etc.)	<b>Industrial</b> (Consumer goods, light-heavy manufacturing, chemicals, transportation, hospitality, etc.)
<b>Support</b>	A, B, C	A	C
<b>Training</b>	A	A	
<b>Implementation/ customisation</b>	A, C	A	C
<b>Add-on development</b>	B, C	B	C

Consider the following examples, which describe each complementor and its development path in the ecosystem, and include in parentheses the types of governance mechanisms which would help with this development:

**Complementor A** may be a German partner with a broad profile, specialised in accounting, finance, tax and HR modules. As such, the firm could be considered a generalist partner providing support, training, and implementation in the German market, with deep knowledge of the accounting, tax, and HR regimes. Complementor A's development path with the Software Vendor ecosystem would consist of developing new software modules (software development kits, product certification, directory listings), maintaining compatibility with Software Vendor upgrades (product roadmaps), improving sales and marketing efforts to increase market share in the German market (co-branding and co-marketing, sales training), and improving efficiency and quality of implementations (standardized methodologies, costing templates, technical support and training assistance, benchmarking).

**Complementor B** may be an American partner that has developed a global CRM add-on to support advanced on-line marketing, segmentation, and pricing. It does not handle generalist implementations, but simply develops and supports its product across all regions and industries. The development path for this complementor would mirror some of the product development-related challenges that Complementor A experiences such as developing new modules and maintaining software compatibility with upgrades, but would include additional challenges related to localization (language packs, consulting on legal restrictions) as well as marketing and sales (contacts with local implementation partners, distribution contacts, country-specific co-marketing and co-branding).

**Complementor C** may be a vertical specialist with deep knowledge of the food processing industry. It would perform general implementations for clients across a broad geographical region (e.g. South America), and sell and support several of its own vertical add-ons for specific industries. Complementor C would need many of the same areas of supports as both complementors A and B, and additionally the type of governance regime for the core firm, either tightly or loosely coupled comes into play. From our data, we observed that The Software Vendor tends to take a passive role in the determination of which vertical sectors are supported, letting partners decide which sectors to target. As a result, some sectors may become overcrowded with vertical add-on offerings, while others may have very few offerings. We have also observed other software vendors who take a more direct role in determining vertical offerings, recruiting new partners based on their expertise in a particular vertical sector which is under-served, and limiting competition in sectors which have sufficient coverage. In section 4.4.4 we discuss this phenomenon in more detail.

In the Affiliate Marketing ecosystem, affiliates vary in terms of the level of their economic activity and commitment to a particular merchant program; they may pursue one or more different business models (blogs, email marketing, price comparison sites, etc.); and may focus on a particular industry sector or sectors. As we have discussed in chapters 2 and 3, and earlier in this chapter, both ecosystems from this thesis feature multiple control levels to which ecosystem partners self-select. In addition, we suggest that key elements of the platform/ecosystem infrastructure may

need to be adjusted for different types of partners. In the model in Figure 4.1, we represent different types of partners in different quadrants; partner size is represented by the size of the circles; and partner control level is shown by their distance from the core.

## **Tools**

Tools play a key role in ecosystems and platforms, and we would assert that the tools offered by the core firm should take into account the heterogeneity of partners. In describing what they call “state-of-the-art tools and building blocks for innovation”, Iansiti and Levien (2004b) state “these shared elements increase the productivity of network members, quickly propagate new innovations through the network, and encourage potential members to join the keystone’s ecosystem” (p. 93).

The user innovation literature has focused on “toolkits” as an example of mechanisms which encourage innovation on the part of customers and end-users (Von Hippel 2001, Jeppesen and Molin 2003, Prugl and Schreier 2006). In the context of product development, Von Hippel (2001) explores how company-provided toolkits enable companies to decentralize information collection regarding end-user needs by giving customers the means to customize select aspects of products themselves. Jeppesen and Molin (2003) examine how toolkits work in a consumer community as opposed to at an individual user level. In the context of video game development, the authors describe “a cross-fertilization through which consumers are actively integrated into the strategy process” (p. 379). The resulting innovation occurs both within parameters set by the manufacturer, as well as challenging these boundaries. Prugl and Schreier (2006) studied the behavior of users who employ toolkits to innovate around the computer game *The Sims*, concluding that the innovation behavior of lead users is long term and evolving, that they often use their own tools to complement those provided by the manufacturer, and that user innovations are in high demand among other users.

In the enterprise software ecosystem, different tools are required for different types of partners. Development partners require software development kits to aid with the creation of new software add-ons; implementation partners are supported through methodologies, and technical support and training; and education partners

require support from training materials, which would necessarily be different for each software product. These tools also must be modified for each software product, and to support various languages and regulatory regimes. In the Affiliate Marketing ecosystem, tools vary depending on the type of affiliate and the activities they engage in while promoting merchants. Affiliates who engage in email marketing are provided with newsletters and other email promotional materials; price comparison sites require data feeds which are frequently updated, or API's which allow them to access merchant product information in real-time; and mobile marketers require promotional materials designed for that format.

The prior research on toolkits cited above has tended to focus on individual firms offering a single type of toolkit in order to enable a group of contributors to innovate around a single product. Our observations in chapters 2 and 3 have shown greater complexity in the use of toolkits: namely, various types of tools supporting various types of partners. Additionally, these tools do not necessarily originate exclusively from the core. Other community members may create tools to support their own activities, and may share these with the community, either for free or as a separate line of business. Consequently, we propose the following:

**Finding 4.3:** Core firms may support different types of partners by creating multiple tools, each of which supports a different type of partner activity. New tools, in turn, may enable new types of partner activities, and partners may contribute new tools themselves.

### **Value Appropriation**

We have observed that support by the core firm for different partner types may be explicit or implicit. Explicit support for a particular partner type would necessarily include specific tools to support that partner's activity, as well as a mechanism for value appropriation by the core firm; in other words, in exchange for supplying the niche player with certain tools and support, the core would retain a portion of the value created by the niche player. This can be illustrated through the case of application development for the iPhone by third party developers. At its inception, Apple would retain 30% of the revenue for any application sale made through the Apple App Store. In other words, app sales were explicitly supported.

Meanwhile, Apple implicitly supported a wide variety of business models for iPhone applications. Developers could place advertising in the apps, or sell subscriptions to premium services, for example. These other business were implicitly supported; Apple permitted developers to earn money through these other means, but Apple did not retain any of the value. Apple has since added explicit support for in-app purchases (sales of additional virtual goods and downloadable content once an application is installed) and for advertising through their recent iAd service (Pietrelli 2010).

We have observed varying degrees of this phenomenon in our two ecosystems. In the Business Software ecosystem, the single value appropriation mechanism supported by the core is retaining a percentage of core software license fees generated by partners. Therefore, the core extracts value from add-on sales by partners, to the extent that an add-on developed by a partner requires a customer to purchase additional software licenses. The core does not offer any mechanisms for participating in any other related products or services offered by partners which do not include additional sales of core software licenses. In contrast, the Affiliate Marketing ecosystem includes multiple compensation structures. Table 2.6, reproduced below for the convenience of the reader, demonstrates that affiliates are compensated based on generating clicks (visits to the merchant websites), sales, leads (the visitor fills out a form), or some combination of these three structures.

Pricing Model	Number of programs	Percentage of Total
CPS	60	44.12
CPC + Sale	30	22.06
CPL	22	16.18
CPC	12	8.82
CPC + Lead	12	8.82

Therefore, we suggest the following:

**Finding 4.4:** While multiple tools may support a variety of partner activity, multiple value appropriation mechanisms allow the core to extract value from a wider range of partner activity.

In the preceding sections of this chapter we have analyzed the two domains of the thesis using transaction cost economics, and have discussed the value of this

theoretical lens as well as its perceived shortcomings in explaining our observations. In the following section we will examine how a focus on platforms and ecosystems may complement this analysis.

#### 4.4 Discussion

##### 4.4.1 *External Value Creation and Innovation*

Both empirical studies in this thesis include a substantial focus on the issue of governance, and governance mechanisms are identified in each. However, due to the distinct theory bases applied, the methodology for identifying and analyzing these mechanisms differs in each case. In the Affiliate Marketing study, four governance mechanisms are identified based on prior literature on transaction cost analysis and agency theory; governance mechanism constructs were deliberately selected based on their applicability to our analysis of the Affiliate Marketing domain, and were not intended to be exhaustive. The Business Software research in chapter 3 is largely focused on advancing theory development in the areas of ecosystems and platforms. The method in this second study, therefore, takes an inductive approach and allows the governance mechanisms to emerge. While some of the constructs identified in the initial study on Affiliate Marketing re-appear in the Business Software study, the names of specific mechanisms are mostly suppressed in order to maximize the external validity of the resultant theory. An expanded explanation of governance mechanisms which play an important role in Business Software ecosystems is included in the appendix in chapter 7, but these are common to a particular software sector, and would necessarily vary in other domains.

The purposes behind the studies of governance mechanisms are somewhat varied in the two studies as well. In the Affiliate Marketing study, formal contracts are created which include certain incentives to ensure that the goals of external partners (affiliates in this case) are aligned with those of the principal (merchants and affiliate networks), the merchants/affiliate networks pursue particular policies of partner selection, and affiliate activities are monitored. The primary goal of these activities is avoiding inappropriate activity on the part of the affiliates – that is, any activity which the merchants deem harmful to their interests. The construct in the transaction cost

analysis which describes this potentially negative behavior is *opportunism*, which can be defined as “some form of cheating or undersupply relative to an implicit or explicit contract” (p. 48, Wathne and Heide, 2000). In other words, the main goal of governance in transaction cost and agency theories (as applied in the Affiliate Marketing study) is for the principals to ensure the *compliance* of affiliates with the intentions of the merchants. The issue of opportunism, however, tends to concentrate more on preventing negative behavior on the part of actors rather than their positive contributions.

While ecosystems and platforms require a certain level of compliance, and this is clearly one objective for the governance mechanisms instituted, a fundamental aspect of this theory base is that ecosystem participants play an important role in *innovation*. That is, through their activities, non-core players create additional value by targeting customers that the core would otherwise not be able to reach, identifying customer needs which are underserved, and providing expertise which the core does not possess. The open innovation literature (Chesbrough 2003, Gassmann 2006) also supports this notion, as does research on lead user innovation (Jeppesen and Molin 2003, Prugl and Schreier 2006, von Hippel 2001).

Therefore, while the transaction cost analysis and agency theory literature view the value chain as the deliberate product of principals who must control the activities of their agents and ensure their compliance, the new literature on ecosystems and platforms takes a more organic view of heterogeneous actors each pursuing their own economic ends. The flow of control, then, is not uni-directional compliance but rather bi-directional inter-dependence, and the resultant ecosystem is developed through a combination of the intentional design of the core and emergent design through the efforts of many external actors. Consequently, while the primary objective of traditional governance theory is *control*, new theory bases such as ecosystems and platforms must necessarily focus on both ensuring *control* and enabling *creation*.

In the course of our analysis of the dynamics of creation and control, we have identified several themes which we believe complement the contributions of transaction cost economics. The following sections will elaborate on these themes.



#### 4.4.2 Graduation and Self-Selection of Control Mechanisms

Finding 3.1A (section 3.4) states “Control infrastructures in technology ecosystems can be graduated, with greater value offered to complementors in exchange for submitting to higher levels of control by the core”. We observed five levels of partners in the Business Software ecosystem (table 3.1). At each successive level partners are offered additional benefits for submitting to higher levels of control by the core firm, and partners self-select to higher levels of control while forfeiting some degree of independence. The base qualification for entry in a higher level is the amount of license sales generated by partners. We observed a similar phenomenon in the Affiliate Marketing domain, though the fragmented nature of the ecosystem means that each merchant maintains its own criteria for program levels, and these are not always transparent to affiliates. Regardless, the base criterion is transaction frequency as measured by visits, sales, or leads generated by the affiliate depending on a given program’s commission structure. In addition, affiliates are offered participation in special promotions by the merchants. Since affiliates choose which merchants to represent and whether or not to participate in these special promotions, we would maintain that there is a high degree of self-selection in the Affiliate Marketing domain as well.

We would suggest that this graduation of control is not directly contemplated in transaction cost economics, primarily because the level of analysis is the dyadic relationship between two firms. In section 4.2 we analyzed each of the two domains studied in this thesis along the dimensions of transaction cost economics, and one could argue that *each level of control* may be considered a distinct hybrid governance form determined to a large extent by degrees of transaction frequency and asset specificity (since uncertainty deals primarily with the completeness and enforceability of contracts). Nevertheless, we believe self-selection to be an important aspect of these types of relationships, as it emphasizes the autonomous nature of the parties; in contrast, transaction cost economics suggests that the governance form is an inevitable result when certain conditions exist. In other words, while TCE sees the selection of a more integrated structure as a movement towards a more hierarchical

structure which more closely resembles a firm, we would assert that this *choice* essentially remains a market decision.

#### 4.4.3 *Balancing Creation and Control*

Table 3.2 identifies specific incentives and infrastructures for creation, and incentives and infrastructures for control in the Business Software ecosystem, and in Finding 3.2c we emphasize that while these creation and control mechanisms are distinct, they should be complementary and are often interdependent. In fact, some mechanisms may even have both creation and control roles. For example, the specialized integrated development environment and development language provided by the Software Vendor are powerful tools to help partners develop complementary solutions through which they may earn additional revenue. At the same time, these mechanisms enforce Software Vendor development standards, ensuring compatibility of software solutions with core software. The specialized knowledge which partners must acquire in order to utilize these tools draws them closer to the Software Vendor, thus increasing Software Vendor control.

Still, core firms must be careful not to exercise so much control that they stifle innovation. In Chapter 3 we cited an analysis by West and O'Mahoney (2008) which noted the tension between control and growth in sponsored source communities; in the study the authors' found that higher levels of controls were associated with restricted growth. In the same study, the researchers identified two types of openness which are positively associated with active participation by contributors: transparency, which allows developers to follow the sponsors' production efforts; and accessibility which allows developers to participate in that production. Efforts to limit these factors by sponsors tended to restrict community growth.

A recent example of this tension may be found in the Apple App Store review process. This process for determining which iPhone and iPad applications gain approval to be sold through the Apple App Store has been criticized as being overly restrictive and lacking transparency. Recently, however, the company has decided to allow the use of third-party development tools after previously banning their use, and has succumbed to pressure to share the exact guidelines used to decide whether a particular application should be admitted to the App Store (Geere 2010). In this

example, the developers' desire for transparency and accessibility influenced the decisions of Apple, which relies on the contributions of these developers for the health and growth of the iPhone/iPad ecosystem.

In the Affiliate Marketing ecosystem, we observed a higher level of control in certain commission structures (pay-per-click), and a lower level of control for programs with other types of compensation. The reason for this has to do with the desire of the merchants and platform providers to stimulate the maximum number of visits which might convert into sales. When a merchant is paying for each visit under a pay-per-click compensation scheme, the quality of the visits is paramount and a higher level of control is required. When the merchant only pays a commission on sales, however, merchants have less of an incentive to exercise a high level of control since visits which do not convert to sales have no cost to the merchant. Therefore significant leeway is given to affiliates to be as innovative as possible in their promotion of merchants' products and services. As we will discuss in the following section, this lower level of control also has an influence on the degree of heterogeneity and variability in the ecosystem.

#### *4.4.4 Heterogeneity and Variability*

The primary unit of transaction cost economics is the transaction. In the Business Software domain transactions are manifested as license sales, while in affiliate marketing they may be visits, leads, or sales, depending on the commission structure for a given merchant program. Meanwhile, a core characteristic of ecosystems is diversity. While the ecosystem could not survive without revenue, without diversity the ecosystem would not be considered "healthy" (Iansiti and Levien 2004). We have observed that an excessive focus on transactions as the primary measure of value causes some degree of conflict in the affiliate marketing ecosystem; merchants tend to focus on measuring the sales which result from affiliate activities, but place little emphasis on the activities used to generate these sales. This likewise occurs in the Business Software ecosystem, where the core firm measures partners based on core license sales. However, what truly increases diversity and improves the health of the ecosystem are the number and variety of complements created. Complementors bring their unique expertise and business focus, and also their ability to address a wide

range of customer needs which otherwise would be extremely difficult and costly for core firms to identify and satisfy.

In transaction cost economics, *variation* is considered a threat to the stability of an interorganizational relationship. Since the primary governance mechanism is the contract, exchange uncertainty is associated with the problem of incomplete contracts, resulting in an adaptation problem when there is variation in the exchange circumstances. However, in the ecological literature, diversity increases the ability of a system to absorb external shocks and to innovate productively. While variability in the quality of goods and services exchanged in the system may be considered negative, diversity in the types of goods and services provided represents positive variability. Niche creation is a measure of an ecosystem's ability to create meaningful diversity in a business ecosystem (Iansiti and Levien, 2004).

Findings 3a and 3b in the prior chapter address the issue of creating measures to encourage and manage diversity, or heterogeneity, in the ecosystem while limiting variation in quality. We have suggested that both creation and control mechanisms should be designed with the intention of reducing quality variance, while creation mechanisms should be designed to maximize heterogeneity. When there is a high level of heterogeneity, however, the challenge of matching supply and demand becomes more difficult. Search and coordination mechanisms serve to create greater cohesion within a diverse ecosystem. In the Business Software ecosystem, participation from the community in such measures as forums, ratings systems, case studies, and recommendations helps ensure meaningful diversity by strengthening the reputation of partners and complements of high quality, and penalizing those which are of lesser quality.

We have also observed that core firms may either take an active or passive role in determining the degree of heterogeneity in the ecosystem. In the Affiliate Marketing domain, merchants generally take a passive approach, accepting most affiliate applications and providing few restrictions of the activities used to generate transactions. We did note certain cases where management was more active, such as the case of a major financial institution which preferred to accept affiliates focused on travel and entertainment, and tended to reject those whose core business was based

on financial services. The motivation in this case was to limit direct comparison between the merchant's products and similar financial products.

Furthermore, we observed various approaches to heterogeneity in different business software ecosystems. As part of the research of the Business Software domain, we conducted interviews with two other manufacturers in the enterprise software sector with different profiles from the Software Vendor of our study. While both were manufacturers of enterprise resource planning software for small businesses and therefore direct competitors with the Software Vendor, one of these other businesses delivers an open source product and relies heavily on community-based development and distribution, while the other produces a proprietary software product and exercises a much higher degree of control over their partners. For the Software Vendor discussed in chapter 3 (which we considered to pursue a middle ground between the other two approaches to control), we found that the core does not pose limits on the number of partners, nor on the type of activities they engage in or whether or not they develop complementary software solutions. The risk of this strategy is that some geographic regions and vertical or horizontal sectors may be saturated with partners and with complementary solutions, while others may have relatively few. The Software Vendor relies on market forces to drive partners towards sectors where there is the greatest need and away from those where competition is excessive. The community also plays a vital role in aggregating demand and rationalizing supply.

In contrast, the manufacturer which maintains tight control actively selects new partners based on their capabilities in a region or vertical or horizontal sector, and rejects new partners working in an area which is already saturated. This active approach both ensures high quality partners and complementary solutions, as well as ensuring a healthy diversity in the offering available to customers. It might be argued that this strategy requires the dedication of greater resources from the core firm, and relies less on the capabilities and insights of partners who are closer to the end customer. This also may limit the efficiency of market forces in determining which partners and complements will be successful, and may block access to many partners

and complements which might have a greater chance at success in a more open system.

The core firm in the open source software ecosystem currently takes a passive approach, allowing partners and developers of complements to self-select, and for the market to decide which are successful. The CEO of this firm confirmed that this was out of necessity due to the company's limited resources and the need to grow quickly. However, he did express the desire to take a more active approach to controlling the heterogeneity of the ecosystem once the company reaches a more mature stage.

Encouraging heterogeneity in the ecosystem may have negative consequences, though. In both the Affiliate Marketing and Business Software studies we observed that while the core firms were effective in monitoring transactions, they had difficulty monitoring the behavior of participants in achieving those transactions. In both cases there was a dearth of formal mechanisms (such as incentives or terms in the formal contract) prescribing acceptable and prohibited behaviors. This may be due to cost considerations, a lack of effective monitoring technology, or some other effect which we have not observed.

#### *4.4.5 Legitimacy and Status*

In Finding 3.4, we observe that the ecosystem core confers legitimacy and status to participants and complementors on the periphery in graduated levels, with participants receiving greater legitimacy and status the closer they position themselves to the core. This was evident in the Business Software ecosystem as partners participated in co-branding and marketing activities, co-sponsorship of events, and coordinated development activities, all of which served to tie the reputation of the partner more closely to the core.

In the Affiliate Marketing ecosystem we observed a similar phenomenon. While affiliates choose which merchants to promote for many reasons, the most important include commission rates (24%), program management (23%), and brand awareness (23%) according to a recent survey of 450 affiliates by AffStat (2009). In this case, brand awareness may be considered a proxy for legitimacy and status. By accepting an affiliate to a merchant program, and allowing the affiliate to use the merchants'

marketing materials and trademarks, legitimacy and status associated with the merchant brand is conferred to that affiliate. In chapter 2, we suggested that the transfer of brand equity could have negative consequences as well. If an affiliate engages in illegal or unethical practices, this negative activity may become associated with the merchants that they represent while engaging in such practices. Our conclusion was that while merchants are generally effective in their monitoring of outcomes, they should be more vigilant in their monitoring of affiliate behavior. In other words, the sole focus on transactions runs the risk of negative affiliate behavior harming the legitimacy and status of the merchant. The graduated control levels in affiliate marketing are the primary mechanism used to reward and punish affiliate behavior. High-performing affiliates are promoted to a higher commission level, and those who engage in negative activities are punished by lowering their commission level or excluding them from the program altogether.

Agency and transaction cost theories view the contract as the primary mechanism for controlling the exchange relationship, but negative activities on the part of the agent (in the above case, the affiliate) not contemplated in the contract may still impact negatively on the principal (the merchant in this case). However, these negative activities would not constitute non-compliance unless they were expressly prohibited in the contract. Therefore, we observe a gap in the ability of traditional economic theory to explain this phenomenon, and see the need for further exploration.

#### 4.4.6 *Firms, Markets, and Communities*

We concur with Boudreau and Lakhani (2009) in their assertion that most external innovation ecosystems are governed by both market and community mechanisms. In addition, and possibly in contrast with extant theory, we have found *purposeful action by the core, with emergent responses on the periphery* (Finding 3.5, chapter 3). We described how in the Business Software ecosystem, the core creates market mechanisms through incentives and infrastructure with the intention of stimulating a high volume and diversity of activity by partners. In addition, community activities are desirable by the core, such as the creation of partner organizations around particular software products, regional markets, partner levels, etc. Other community activities

may be less desirable by the core, such as negative discussions and ratings in independent forums, for example.

In the Affiliate Marketing ecosystem, community forums and conferences are important mechanisms for sharing information on new programs, discussing best practices, selling complementary products, etc. However, these community mechanisms may also be a setting for complaints about certain merchants' commission structures, slow payment, low conversion rates, or poor response from affiliate managers. Another general area within affiliate marketing where this phenomenon is important is in the area of adoption of new technologies. In chapter 2 we describe several tools created by merchants and affiliate networks for use by affiliates such as banners, registration forms, data feeds, etc. Many of these tools are costly to create and to maintain, and require a high level of adoption by affiliates in order to be worthwhile. In other words, the creation of the tools is not enough; the active participation of the community in finding new applications for applying the tools is also required.

#### 4.5 Additional Conceptual Development

We began this chapter with an analysis of the two domains from this thesis along four dimensions of transaction cost analysis (asset specificity, transaction frequency, environmental uncertainty and behavioral uncertainty). Following this analysis, in section 4.3 we considered the capacity of transaction cost economics to explain the observed phenomena from the two domains. We concluded that TCE has certain explanatory value in dyadic exchange relationships, and our analysis pointed towards a hybrid or network form in both domains. However, we identified several shortcomings of the theory. First, based on both our analysis and conclusions in the extant literature, we suggest in Finding 4.1 that the factors which determine governance form are incomplete; and that the direction of causality between these factors and governance form is not always clear. In Finding 4.2 we found that the core firms in each of our research domains tend not to consider each dyadic relationship individually in determining governance form, but rather develop a coordinated portfolio of distinct relationship types, each of which may have several levels. This is primarily due to the extreme degree of heterogeneity which is both necessary and desired, and which is



not contemplated by TCE's assumption of a single principal and either a single agent or homogenous group of agents. In addition to multiple governance forms, the heterogeneous nature of our domains requires multiple sets of tools to support complementor activities, an additional aspect not present in transaction cost and agency theories. Finally, we address the issue of value appropriation which is key to the success of the principal, core firm. While TCE does not address this issue directly, we have observed that the configuration of value appropriation mechanisms can present a major challenge for core firms, citing the case of Apple and how their explicit and implicit mechanisms have evolved.

In section 4.4 we engage in a deeper discussion of themes raised in chapter 3 regarding the additional value offered by ecosystem and platform theory. Here we contrast the objective in transaction cost theory of controlling agent opportunism with the dual goal in ecosystem and platform theories of both ensuring control and enabling creation; we emphasize the importance of agency on the part of ecosystem participants since, while core firms establish creation and control mechanisms, complementors must self-select their level of participation in the ecosystem; we echo prior research in emphasizing the need to balance creation and control in the ecosystem; we consider the role of heterogeneity and variability, exploring the idea that core firms may take multiple approaches in their efforts to balance creation and control, ranging from a tight control regime to a more passive approach; we addressed the role of legitimacy and status as a factor in complementors' self-selection of their involvement with a given ecosystem; and finally we considered the issue of the co-existence of both market and community mechanisms in our observation that, due to the autonomy of ecosystem participants, ecosystem structure is ultimately determined by the interaction between purposeful action from the core and emergent responses on the periphery.

This last is perhaps the best way to summarize our overall conclusions based on our analysis that while governance is purposefully designed by the core, there are multiple possible outcomes for a similar set of theoretical antecedents, something which transaction cost economics does not anticipate. We see this most clearly in our

description of the three different governance regimes we observed in the enterprise software industry which take very different approaches in similar circumstances.

In the introduction to this thesis we discussed the overriding research question of this thesis as the “Goldilocks governance problem” as identified by Tiwana et al. (2010). We state this question as the following:

**RQ 1:** How do platform owners design their ecosystems for generativity, while maintaining the right level of control over the evolution of the platform?

While we make detailed observations in our two domains of the configuration of mechanisms which encourage generativity as well as mechanisms for instituting control over complementor activities, we are left with the desire for a deeper understanding of these forces, and what might constitute the “right” configuration. However, as we have observed, the ongoing interaction between core and periphery means that an ecosystem’s governance structure is continuously evolving, and so it is unlikely that a lasting ideal configuration is even possible. A more promising approach may be to gain a better understanding of the underlying tensions between the efforts of the core to balance creation and control through governance mechanisms, and the autonomous reaction from contributing firms on the periphery.

In the remainder of this chapter we propose to address research question 4.3 by conducting a review of the paradox literature regarding tensions, and applying this additional lens to our research domains. We make no pretense to advance the research on paradoxes. Our intention rather is to use it as a theoretical framing device to add to the governance literature by highlighting exemplars of tension inflection points, and analyzing the triggers which cause these tensions to become salient, contradictory, and disabling. Our observation is that when actors reframe their experience as either duality or dualism, there are various possible responses in terms of governance. What also becomes clear from our exemplars is the agency of both the core and the periphery; when tensions lead to conflict both parties may take action, either separately or in concert, and the final governance condition is a result of this interaction.

Given the extreme heterogeneity in which the sector operates, our case study of the Business Software ecosystem is particularly relevant for the illustration and

analysis of these tensions. While we have less detailed data regarding tensions in the Affiliate Marketing ecosystem, we include a less extensive analysis of our second domain as well.




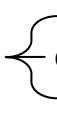
Paradox studies, in their simplest forms, explore how organizations can meet competing demands simultaneously (Smith and Lewis, 2011). There are differences in the manner by which tensions can be framed or leveraged (Cameron 1986, Poole and Van der Ven 1989, Smith and Lewis 2011). An important notion used in framing paradoxical tensions in the managerial research is the concepts of dualism and duality (Farjoun 2010). Conceptually, tensions can be manifest as competing trade-offs that present either/or decisions in the form of discrete alternatives, as a dualism. Alternatively, tensions can function as complementary and mutually enabling attractors in a holistic system, as a duality (Farjoun, 2010). Given the centrality of tensions in ecosystem governance, we will explore how complementary or competing logics become manifest in the ecosystem; both in the governance mechanisms as well as in participant decision making.

The idea of dualism is a well-established view typically associated with trade-offs, tensions, conflicting alternatives and exclusive categories. Accordingly, dualism frames tensions as mutually exclusive, either-or, or exhaustive classes (Farjoun, 2010). Perhaps the most widely acknowledged dualism in the management literature is the classic view that exploration and exploitation are exclusive trade-offs (March, 1991). In simple terms, the resource pie is fixed, and efforts expended in exploration are, by definition, efforts not expended in exploitation. With dualism, the choice between two competing options is always a zero-sum game (Farjoun, 2010).

The concept of duality, by contrast, views the two options not as competing, contradicting, and mutually exclusive; but rather as interdependent, compatible, mutually enabling and constituent of one another (Farjoun, 2010). As an example, consider control mechanisms. While their immediate goals are variance reduction, predictability, and other stable outcomes, the very existence of successful control mechanisms simultaneously enables innovation, exploration and other endeavors. Exploration cannot be achieved without the economic sustainability provided by exploitation. Likewise, exploitation today was enabled by exploration in the past.

Admittedly, this is not entirely inconsistent with the internal logic of a dualism. Dualisms, via a premise of competing alternatives and zero-sum games, also acknowledge that trade-offs require balance, and that normally the appropriate mix of both options is required. The main difference and augmentation of a duality perspective is to emphasize the enabling and interdependent characteristics of each option. Hence, a logic of zero-sum games is replaced by a logic of positive-sum games.

Paradox scholars have suggested that paradoxes can be both latent and salient. The idea is that the process of organizing produces latent tensions that exist in an interdependent, mutually enabling duality, but certain environmental triggers may bring paradoxical tensions to the foreground as salient, contradictory dualisms. It is worthwhile asking what are the triggers that make them salient; that is, when and how do paradoxical tensions surface to frame or define specific problems or decisions? Smith and Lewis offer three factors that can render paradoxical tensions salient: 1) plurality; 2) change; and 3) scarcity (Smith and Lewis, 2011). Plurality increases options leading to uncertainty, which surfaces as competing goals and scarcity of resources. Likewise, change also highlights new options and competing opportunities, and increases uncertainty. Finally, resource scarcity surfaces the well-known problems of trade-offs; a decision to allocate limited resources in one area is a decision not to expend them in another. This is summarized in Table 4.4 below.

Table 4.4. Tensions in duality and dualism		
Duality	Triggers	Dualism
Tensions are: Latent Complementary Enabling 	 Plurality Change Scarcity 	Tensions are: Salient Contradictory Disabling 

The question of the source of paradoxical tensions is described in much of the paradox research (Cameron 1986, Poole and Ven 1989) as either: a) inherent in the system, or b) socially constructed, and resulting from the actor's cognition and social action. We have substantial evidence to suggest that the designers of governance in the Business Software ecosystem are highly cognizant of the underlying tensions in their ecosystem, and have attempted to accommodate these tensions constructively in

the design of the control levers. Simply stated, they have attempted to harness the benefits of the duality as mutually enabling opposites that enable generativity. However, substantial case evidence also suggests that these mechanisms do not always succeed as desired; conflict, anxiety and defensive behavior emerge. In this case, tensions, once latent enabling forces of a duality, become salient contradictory and detrimental forces of a dualism.

We identify three exemplars of the logic of duality and dualism as evident in our data from the Business Software domain along with one exemplar from the Affiliate Marketing domain, and attempt to identify what triggers the transitions between these logics. We do so by analyzing detailed statements from interview respondents that exemplify these transitions. The exemplars are:

- the use of standardized implementation strategies in heterogeneous markets,
- the competitive balance between partners,
- complement generativity and scale economies.

The main premise of this analysis is that the designed purpose of the ecosystem governance is to embrace the tensions as a duality; that is, tensions can be harnessed for optimal value for the ecosystem dynamics. However, due to the realities of working relationships and operations, these tensions can become manifest as less-constructive dualisms.

#### *4.5.1 Example 1. Standardized implementation methodology across heterogeneous implementations*

ERP ecosystems are characterized by extremely high levels of heterogeneity, arguably more so than any other type of technology ecosystem. An important source of heterogeneity is the fact that each customer must address the issue of when to change the software to fit the business context, and when to change business processes to accommodate the software. The very high cost of customizing the software is generally the greatest single cost borne by the ecosystem collectively; core, complementor and therefore customers. In addition, ERP systems are, at the most basic level, financial accounting systems, and thereby closely bound to the accounting

and legal regulations applicable in the country of use; localization of the software is of critical importance. As stated by the core channel managers:

*Localization affects three main areas: translation, legal requirements, and local business practices... It's not easy to manage the localizations at the global level, continent level, country level ... Localization costs remain one of our single largest concerns (Software Vendor).*

In an effort to reduce these localization costs, the Software Vendor has developed a standardized implementation method that it recommends all implementation partners use, and further requires for higher certification levels. The Software Vendor has attempted to embed a single, general-use methodology in the tool:

*[With our tool] there is a clear trade-off between quality control, PM discipline, and speed and agility. So what we have tried to do is embrace this flexibility in the tool-via filters and project profiles. Partners can use the templates more or less as they like... (Software Vendor).*

Yet the one-size-fits-all ideal of the method is admittedly utopian:

*Are we generating paper, or are we parameterising? Well – this is the ideal, but hard to achieve. We think that it is good to have a method to show to customers. On the negative side, it is still not easy enough to handle a customization. There is a risk of over-automation and it could ruin the project (implementation partner).*

This relates not only to the heterogeneity of projects, but also to that of partners.

*It is important to stress the differences between the different partners. Some of the large partners will operate completely differently to the smaller partners. Especially considering the transition from sales to implementation (implementation partner).*

As a result, the implementation partners resort to pragmatic workarounds based on context and need:

*Partners think it is difficult to use a methodology completely, because there are differences between countries, markets, customers, specialization, etcetera that can affect the methodology implementation (Software Vendor).*

*Partners use methodologies provided by platform core when it makes sense. They use what they need and ignore what they don't. Their technicians develop their own tools to fill in the gaps of what is lacking from the core (implementation partner).*

[Software vendor] recognizes the trade-off, and further acknowledges the difficulties and costs of implementing extensive control regimes. They therefore attempt to leverage market mechanisms to supplement its control requirements:

*You cannot test for the business functionality of the product. It is totally impossible. This is why we require the customer references – let the market speak. This is a very risky strategy of course, because as mentioned above, at the end of the day it all comes back to [Software Vendor] (Software Vendor).*

The final statement, 'it all comes back to [Software Vendor]' refers to the potential agency costs borne by the core. They prescribe standardized implementation methods and client based testimonials as a market validation of complements and complementors to mitigate this risk. Yet, complementors adopt the standardized methods selectively and use their own techniques where necessary.

#### **Example 1. Summary - standardized implementation methodology across heterogeneous markets**

- **Duality:** Standardize control methods enable consistent, standardized quality control of implementations. Second order effects should include increased technical compatibility of complements across core implementations.
- **Dualism:** Implementation partners ignore standardized implementation methods, either selectively or completely. Localization costs remain high, technological compatibility across complements constrained.
- **Triggers:** Pluralism. Extreme heterogeneity of implementation projects, differences across legal, geographic or industrial sectors, diverse genesis of implementation partners, disdain for centralized control.

#### *4.5.2 Example 2. Competitive balance between partners*

A significant issue in the ecosystem is the competitive balance between partners. This relates to the number of partners in general:

*There are no barriers to becoming a platform partner if you comply with their certification requirements. For example, they do not limit the total number of partners in the channel due to anti-trust regulations (implementation partner).*

This can lead to high levels of competition between partners in specific markets. The frustration from the implementation providers is evident:

*[Software vendor] is too focused on sales of licenses. Every month there is tremendous pressure from [Software Vendor] for the partners to report results. Most partners are losing money due to this excessive pressure and short-term focus (implementation partner).*

The competitive pressures between partners have a variety of undesirable consequences. For example, complementors work together in terms of training and cooperation on projects, but at other moments, they become competitors.

*Training is handled by external centers, certified by [Software Vendor] which are managed by third parties. The main problems with this external training model is that it creates a conflict of interest for these 'training centers', who also provide other services such as programming support for other partners, creation and implementation of add-ons, ... The partners doing the training are my competitors, and if I send my people there, well ... (implementation partner).*

Hence, there is a perception that the Software Vendor lacks loyalty to individual partners, and this breeds a certain defensive posture amongst some:

*If you ask a partner who their biggest competitor is, they'll say 'another partner'. The implication is that there is more competition between partners offering [application] than with competitors offering other software packages, like [competing packages]... If there are three partners competing for the same work, [Software Vendor] always wins (implementation partner).*

Frequently, partners work together successfully to combine areas of expertise to solve complex projects. But the competitive tendencies remain.

*Where collaboration between partners can work is in situations where you need special expertise for a particular project, and you create a joint venture with*



*another specialized partner. However, the large partners don't have any incentive to help a small partner grow (implementation partner).*

The competitive situation between partners can often result in conflicts within the same project or vertical. Common country-level modifications should ideally be shared and amortized over as wide a market as possible. However, this is not always the case.

*[Software vendor] tries to integrate the local regulations of each country into their software, but there are always areas which are lacking, which need improvement, or which have errors. And each partner makes their own changes, but there's no incentive to share this with other partners or even with [Software Vendor]. All of the localizations created by the individual partners are different and not necessarily compatible. So all of the partners have the standard version of [application] and their own 'standard plus' version. This becomes a point of differentiation, where partners claim that their standard plus is better than the others (implementation partner).*

The statements suggest that the extreme heterogeneity of the ERP market manifests itself in legitimate modifications to the software which are driven by localization requirements. However, there is some evidence of overcrowding in the complementor market that constrains cooperation between complementors in instances where the sharing and common development of the localizations would be optimal.

### **Example 2 Summary-competitive balance between partners**

- **Duality:** Platform core wants to generate as much growth as possible in the ecosystem. This includes growth of overall license revenues via liberal access by partners to ecosystem. Market mechanisms will dictate allocation of resources by partners, and facilitate quality control. More partners generate greater choice, equitable pricing, and potential value for customers.
- **Dualism:** Overcrowding and excessive competition amongst partners. Consequent downward price pressure limits potential revenue, cooperation and re-use of common regional modifications across partner consortia.
- **Triggers:** Pluralism and scarcity. Large numbers of partners compete for limited clients. Heterogeneity across markets limits potential re-use and collaboration

across markets and specializations, thereby constraining social goods in the ecosystem.

#### 4.5.3 Example 3. Complement generativity and scale economies

One of the main goals of a successful platform is to obtain substantial scale, longevity, and potential for wealth generation to attract complementors. Specifically, a potential complementor needs to be convinced that investments made in the platform will yield adequate long-term returns. Towards this goal, our case data indicates that there is clear evidence to suggest that the [Software Vendor]'s brand value and common marketing strategies have substantial positive effect for the partners.

*[Software vendor]'s brand is helping partners to sell [software application] ... The consolidated position of [Software Vendor] is recognized by the market. Now partners have more opportunities, especially access to big deals (implementation partner).*

More complements suggest more options and potential value for clients. However, we also find some indication that liberal governance of the complements leads to some overcrowding, both within industrial sectors and geographic regions:

*[Software vendor] has decided to allow as many verticals in the market as the partners wish to create...There really should be four or five broad verticals in [region], but instead there are about 300. The problem right now is lack of demand for the verticals (add-ons), because each is so specific (implementation partner).*

The extreme heterogeneity of the regional niches prohibits implementation partners from achieving adequate size and scale economies to develop truly high quality complements:

*The problem is that the small to midsize partners who are regional or national neither have the size to dedicate programmers to developing vertical solutions, nor do they have enough implementations to amortize the cost of developing the solutions. The investment needed is too high compared to the eventual benefit since the partner absorbs all costs related to development, registration,*

*certification, and compatibility with new version of [application] (implementation partner).*

Liberal governance of complements has additional negative consequences. Complementors must develop complements to the core, but some insecurity about the evolution of the core plagues their development efforts.

*Partners don't clearly know where products are going, so partners don't know if they are developing the products in the right way, because new versions of [application] can absorb the partner's developments... The partners develop an add-on for a specific version of [application], but when a new version appears, it is difficult and expensive for the partner to make the add-on compatible with the new version (implementation partner).*

As a result, some partners even expressed a desire for tighter governance and reduced heterogeneity in order to avoid what they perceived as excessive redundancy and lack of financial amortization across common complements.

*The situation where each partner creates their own verticals is a way for them to differentiate one from another, but in the end there are many versions of a particular vertical for a client to choose from, and in the end the client ends up paying for the costs of development. Having [Software Vendor] put their seal of approval on a handful of partner solutions in each vertical segment would result in lower TCO for the client and greater standardization, but it would mean less differentiation for each partner. [Software Vendor] would also have to compensate the partners for their versions of the verticals. So, while it would mean lower fees for the partners, it would also mean less investment in product development (implementation partner).*

The combination of platform evolution insecurity and overcrowding was summed up succinctly by one implementation partner:

*Since the evolution of products is not clear, partners invest in solutions with no future or with a lot of competition, and they are competing in the same accounts with similar solutions (implementation partner).*

The Software Vendor does not attempt excessive regulation of the complements. There is a clear tendency to respect local market knowledge. However, they also acknowledge the implied agency problem.

*We have to believe that our partners understand the local market conditions best. It would be impossible for [Software Vendor] to determine these conditions better than them ...So officially [Software Vendor] does not have any commitment to the customer. However, it always comes back to [Software Vendor] anyway (Software Vendor).*

There is an understandable desire to respect the often substantial local knowledge that complementors acquire through experience. Permitting numerous complements to serve a specific market speaks to a logic of generativity, market responsiveness, and sensitivity to unique client needs. Yet excessive quantity and redundancy of complements creates an overcrowding problem, with limited common amortization, expertise sharing, and overall higher TCO.

### **Example 3 Summary - generativity & complements**

- **Duality:** Liberally governed complementors use market mechanisms to respond to local market requirements. A greater number of complements implies increased choice and potential value for clients, subsequent growth of the ecosystem, and greater value for complementors.
- **Dualism:** Overcrowding and excessive competition between complements. Consequent downward price pressure limits market value and resource allocation to individual complements, constraining quality. Lack of coordination across similar complements creates redundancy, hindering amortization of functions that are common at legal or sector level, and further exacerbates localization costs and TCO.
- **Triggers:** Pluralism and scarcity. Large numbers of partners generate similar complements for individual clients. Where possible, re-use and collaboration across markets is limited due to: a) modest coordination, and b) competitive positioning between complementors. Uncertainty about platform evolution (change) provides additional uncertainty.

#### 4.5.4 Example 4: Use of merchant brands by affiliates

To add some symmetry to our analysis, in this section we will analyze an exemplar from the Affiliate Marketing ecosystem. In chapter 2 we explored four governance mechanisms in the Affiliate Marketing ecosystem: *formal contract*, *partner selection*, *incentives*, and *monitoring* (of outcomes, and of behavior).

One key tension observed relates to the representation of the merchant's brand by affiliates. In a 2009 survey of over 450 affiliates (AffStat 2009) "brand awareness" was the second most important factor for why affiliates choose to represent a particular merchant, yet in our analysis of the formal contracts, the area where we saw the most restrictions was precisely in how affiliates are able to represent the trademark(s) of the merchant. In other words, the brand recognition of a particular merchant is a key asset for affiliates in their efforts to generate leads and sales. Hence the affiliate's motivation is to display the merchant brands prominently in their methods of promotion wherever possible. This is generally highly beneficial to the merchant, as it helps to diffuse the merchant's brand image as widely as possible, and often to audiences who are not part of the merchant's core customer base. However, merchants perceive some uses of their brand (in the form of trademarked names and images) as in conflict with their own marketing efforts, and therefore certain uses of merchant trademarks by affiliates are restricted.

While the full analysis is included in Table 2.4, in Table 4.3 below we summarize the most common restrictions on the use of trademarks for the convenience of the reader, included the percentage of the programs which included each restriction:

<b>Restriction</b>	<b>Percentage</b>
Affiliate is restricted from bidding on the merchant's trademark(s)	29.31
Affiliate is restricted from using the merchant's trademark(s) in advertising copy	18.97
Affiliate is restricted from bidding on the trademarks of the merchant's competitors	11.21

The motive behind these restrictions is to avoid affiliates' co-opting traffic in search engines intended for the merchant's own web site. In other words, if the visitor would have gone directly the merchant site, why should the merchant allow the traffic to be diverted the affiliate site resulting in a commission for the affiliate (and a cost to

the merchant) that they otherwise would not have earned? This seems logical, yet the interpretation of whether the affiliate is representing the merchant's brand correctly or is in violation of program restrictions remains with the merchant. Therefore one conflict which we observed is that while merchants may view the trademark restrictions as clearly stated in program guidelines, affiliates may interpret them differently, perhaps in part due to the extreme importance of the merchant brand as a strategic asset in promotion efforts.

As we mentioned in chapter 2, one complicating factor for affiliates is the ability of merchants to reduce an affiliate's commission structure or cancel their participation in the program completely at any time, and with little or no explanation. Therefore, a perceived violation of restrictions could result in the cancellation of the affiliate relationship, with little recourse for the affiliate. One successful affiliate we interviewed told the story of how their participation in the affiliate program of a prominent bank was cancelled for their "repeated violation of program policies regarding trademarks". Apparently the affiliate had been advertising in search engines for the search term "personal loans", which inadvertently was a match with the search term "personal loans [prominent bank]". In spite of the unintentional nature of the violation, the affiliate was given no recourse and was summarily dismissed from the program.

Open policies towards partner selection exacerbate the conflict regarding the use of trademarks. In chapter two we observed that a small percentage of merchants (13.24%) include limitations in the formal contracts regarding the types of affiliates they accept, the vast majority have no such restriction. We therefore concluded that most merchants maintain a fairly liberal policy for accepting affiliates. We quoted one merchant as saying "the criteria are not strict for accepting sites, but rather it's the tracking (monitoring) that happens later which determines whether the site is a good partner or not". When it comes to monitoring, however, we found that merchants tended to deal with violations of trademark policies on an exception basis, lacking a systematic approach to monitoring affiliate behavior. One merchant offered that "while there aren't currently any tools which control this behavior completely, it is still very controllable through coordination with our internal SEO and search marketing

efforts.” While powerful tools are available for monitoring affiliate *performance*, the sheer number of affiliates resulting from a liberal partner selection policy and the lack of tools makes it difficult for merchants to monitor affiliate *behavior*, particularly when it comes to the use of trademarks.

#### **Example 4 Summary – use of merchant brands by affiliates**

- **Duality:** Affiliates rely on the strength of a merchant’s brand as a strategic asset in their promotion efforts. Merchants likewise appreciate the ability of affiliates to achieve maximum diffusion of their brand to a diverse range of customer segments.
- **Dualism:** Merchants work hard to establish and maintain a certain brand image, and some use of merchant trademarks by affiliates may cannibalize the merchant’s own marketing efforts. In addition, association with inappropriate content may damage the merchant’s brand reputation. We have observed that merchants lack effective tools for monitoring the behavior of large numbers of affiliates. At the same time, the power advantage merchants hold over affiliates allows them to take unilateral action which make tensions latent.
- **Triggers:** Primarily pluralism, as a lack of efficient and effective monitoring tools make it difficult for merchants to monitor affiliate behavior. Tensions become latent when affiliates either inadvertently or intentionally subvert merchant policies regarding their brand.

#### *4.5.5 Reflection*

Smith and Lewis (Smith and Lewis, 2011) suggest that the triggers between paradoxical tensions can be both environmental, as well as products of framing and cognition. Our analysis certainly finds evidence of both of these, but also further pinpoints their specific nature. Example 1 identified the limitations to a standardized implementation method as a contradictory logic. Here, the main trigger of a contradictory framing was pluralism, specifically the extreme market heterogeneity inherent in the ERP market (environmental) combined with some emotional resistance to centralized control regimes. Example 2 identified the excessive competition amongst partners as a contradictory logic. In this case, liberal access to the ecosystem by partners, combined

with un-coordinated, self-interested behavior limited cooperation and the sharing of common regional standards, and accelerated downward price pressure in the ecosystem. Example 3 represents a similar logic at the level of complements, where extreme competitive behavior produces redundant investments in lower quality complements, overcrowded markets, and lower prices. In addition, uncertainty about platform evolution further constrained optimal investments in complements. In Example 4 we found that the plurality of affiliates is a desired outcome for merchants in the Affiliate Marketing ecosystem, yet the lack of effective tools for monitoring large numbers of partners may result in latent tensions when affiliates either intentionally or inadvertently violate program restrictions.

Examples 2 and 3 specifically resemble a classic 'market failure' from the economics literature, where the outcomes are socially sub-optimal due to self-interested behavior, bounded rationality, uncertainty, and information asymmetries (Bator, 1958). While our case did not emphasize them, similar issues were identified from the perspective of the customer; that is, excessive choice and redundancy resulted in customers adopting what was often a less optimal product, where superior products existed. However, the inability to evaluate alternatives in a transparent and effective manner produced a socially sub-optimal outcome. In line with this argument, substantial case testimonies called for greater coordination with the ecosystem to reduce the information asymmetries and increase cooperative behavior.

Smith and Lewis (Smith and Lewis, 2011 p. 390) state that 'pluralism expands uncertainty and surfaces competing goals and inconsistent processes (Cohen and March, 1974)'. Our case analysis confirms this position, and further highlights explanations from the economics literature as its source. The environmental pressures of extreme heterogeneity and competition are exacerbated by uncoordinated self-interested behavior, information asymmetries, bounded rationality and uncertainty, producing sub-optimal outcomes similar to market failures.



## 4.6 Conclusions

<b>Table 4.6. Summary of Research Findings</b>	
<b>Research Question</b>	<b>Findings</b>
<p><b>RQ 4.1</b> What aspects of ecosystems/platforms as a new organizational form are explained by transaction cost economics and agency theory?</p>	<p>In section 4.3 we analyze the two domains of this thesis, Business Software and Affiliate Marketing, according to four dimensions of transaction cost economics: asset specificity, transaction frequency, environmental uncertainty, and behavioral uncertainty. We have concluded the following:</p> <ol style="list-style-type: none"> <li>1. Transaction cost economics is generally effective in determining the most effective governance form for a dyadic relationship. The theory has explanatory value regarding issues of hold-up costs and partner lock-in, the completeness of contracts, and the difficulty of monitoring exchange behavior.</li> <li>2. However, there is a level of analysis problem, since when studying ecosystems we observe multiple hybrid forms operating simultaneously. We do not believe that transaction cost economics contemplates this degree of heterogeneity. This effect is compounded when we consider fragmented ecosystems.</li> <li>3. While changing the focus to governance mechanisms has greater explanatory value in ecosystems, we believe that a taxonomy of governance mechanisms has limited value in explaining optimal platform design, and have taken the perspective in our research that such an analysis is an initial step towards a broader analysis.</li> </ol>

<p><b>RQ 4.2: What additional explanatory value is provided by platform/ecosystem theory?</b></p>	<p>In section 4.3 we identify new Findings based on what we view as the limitations of TCE and our observations in the two domains studied in this thesis.</p> <p>Finding 4.1: TCE has explanatory value for the choice of a hybrid/network governance form, but excludes many of the key factors which determine (and result from) this choice; the levels of some factors may be the result of the choice of governance form, not vice versa.</p> <p>Finding 4.2: In contrast with a dyadic focus on each inter-firm relationship individually, core firms in an ecosystem manage their relationships with multiple, heterogeneous partners through a coordinated portfolio of distinct relationship types which correspond to the various partner roles, and which may be graduated in nature. We have called this the “solar system” model.</p> <p>Finding 4.3: Core firms may support different types of partners by creating multiple tools, each of which supports a different type of partner activity. New tools, in turn, may enable new types of partner activities.</p> <p>Finding 4.4: While multiple tools may support a variety of partner activity, multiple value appropriation mechanisms allow the core to extract value from a wider range of partner activity.</p> <p>In section 4.4 we summarize additional themes which emerged in chapter 3 and which we believe to complement the traditional economic discourse. These include:</p> <ul style="list-style-type: none"> <li>• external value creation and innovation</li> <li>• the graduation and self-selection of control mechanisms</li> <li>• the treatment of heterogeneity and variability</li> <li>• transfer of legitimacy and status</li> <li>• the co-existence and interaction of market and community mechanisms.</li> </ul> <p>We expand on these themes in the Business Software ecosystems, and additionally explore these themes in the Affiliate Marketing context in order to compare and contrast their applicability to other ecosystems besides business software.</p>
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<p><b>RQ 4.3:</b> What additional conceptual development is needed?</p>	<p>In section 4.5 we introduce theory from the literature on paradoxes and provide empirical data to analyze when tensions seem to be latent, and therefore complementary and enabling; when they seem to be salient, and therefore contradictory and disabling; and the triggers between these distinct states. Four exemplars are analyzed where the desired logic of duality is subsumed by a salient logic of dualism. These were: 1) standardized implementation strategies; 2) competitive balance between partners; 3) complement generativity and scale economies; 4) the use of merchant brands by affiliates.</p> <p>Consistent with previous theorizing, we identify three important triggers of these transitions: 1) plurality, and 2) scarcity were most significant in our examples, with 3) change (uncertainty) creating secondary effects. These triggers produce outcomes similar to a market failure in the ecosystem driven by uncoordinated self-interested behavior, information asymmetries, bounded rationality and uncertainty.</p>
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## 5 CONCLUSIONS AND FUTURE RESEARCH

The research journey of this thesis began with an observation in a particular domain, affiliate marketing, and progressed to an additional major project analyzing the channel organization of a major business software manufacturer. We collected extensive qualitative and quantitative information from dozens of contributors representing hundreds of projects in our efforts to address research questions with significant practical and theoretical implications. In the process we had the opportunity to apply various theoretical lenses to these two domains, as we experienced firsthand the value and limitations of each theory in its ability to explain our empirical observations. In the following sections we will describe the research journey as we experienced it, analyze our contributions to extant research, and propose areas for future research.

Let us begin with the research from chapter 2. Working as an affiliate promoting various web-based travel agencies, this researcher observed that several other affiliates representing the same travel companies were engaging in certain questionable practices like spam, exaggerated statements about products and services, and technical tricks to re-direct traffic from visitors, often unbeknownst to the visitors. While many of these practices were not in direct violation of the affiliate contracts, they did seem to be activities of which the travel agencies, were they aware of them, might not approve. Therefore, the first practical question driving this research was how merchants promoting their services through affiliate marketing were currently controlling the activities of their affiliates, and how they might improve these practices?

Next, we needed a theoretical lens through which to conduct our analysis. We first turned to agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976; Ross, 1973), since this seemed to be a classic principal-agent conflict. The formal contract is the key focus in analyzing this relationship, and there are two main problems addressed: a) the desires or goals of the principal and agent conflict; and b) it is difficult or expensive for the principal to verify the agent's activities (Eisenhardt, 1989). This seemed to describe our situation well, and as a member of multiple affiliate

networks (intermediaries who facilitate the relationship between merchants and affiliates), we had access to all of the affiliate contracts of the three principal affiliate networks in Spain.

After analyzing these formal contracts, however, we felt we still had not found sufficient information in order to address our practical research question. There were some practices which violated the contracts and of which the merchants did not appear to be aware, and others which were not in direct violation of the contracts, yet seemed in conflict with the intentions of the merchants. Here we felt that using only agency theory limited our analysis since it focuses exclusively on the formal contract as the unit of analysis. We therefore turned to transaction cost economics (Coase, 1937; Williamson, 1975, 1985) as a way to extend the analysis to a broader understanding of governance in the merchant-affiliate relationship.

We decided to follow the model provided by Wathne and Heide (2000, p. 44) as the basis for the governance mechanisms employed in this research (partner selection, incentives and monitoring), along with the formal contract as used in agency theory. Our formal research question then became:

**RQ 2.1:** How are governance mechanisms used by merchants in one-to-many, Internet-based affiliate marketing programs in Spain to control the activities of their affiliates?

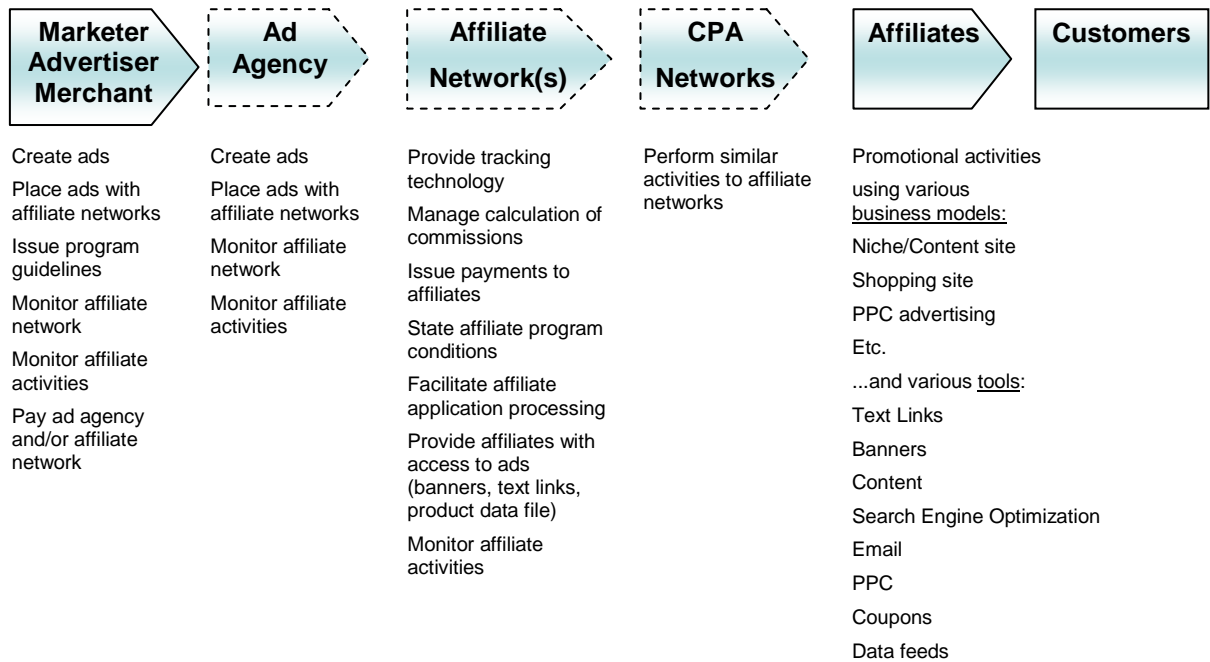
We found that there is a serious lack of transparency as to what affiliates are and are not allowed to do in their promotion of merchants' products and services. The situation is further complicated by the existence of several sets of contracts and guidelines from the merchants, from affiliate networks, and even from third parties such as search engines. This makes the affiliate's task more difficult when it comes to conforming to the expectations of merchants, and it increases the importance of the other three governance mechanisms discussed in chapter 2. In addition, the merchants have significant power in their management of their affiliate programs: they generally reserve the right to alter or cancel the arrangement with a particular affiliate at any time and for any reason (which need not be communicated to the affiliate). While this may be an effective governance mechanism, greater transparency may help to create more positive merchant-affiliate relationships. We conclude by prescribing several

measures that merchants may implement to improve the management of their affiliate programs.

Now the question becomes: how effective were we at answering our initial research question? We began with agency theory and found our analysis to be incomplete since simply writing contracts and enforcing them is difficult in an environment as dynamic as affiliate marketing. The additional three governance mechanisms suggested by Wathne and Heide's model gave our analysis further breadth, but we still have the impression that we fell short of our goal. We will attempt to describe what we feel are the shortcomings of transaction cost analysis and agency theory in explaining the observed phenomena.

First, we should consider the types of domains where transaction cost theory has been applied. Transaction cost economics reduces the scope of analysis to that of a series of exchanges between two firms. The affiliate marketing domain we consider in chapter 2 is quite complex, however, since there is a one-to-many relationship between each merchant and its thousands of affiliates. Each affiliate may pursue one or more business models, and has the option of using many different promotional tools to accomplish its goals. The challenge of merchants is to create a governance structure which supports the activities of many different types of affiliates performing many different types of activities. This becomes even more complex with the incorporation of additional entities in the channel, such as affiliate networks. We attempt to summarize the complexity of the channel in Exhibit 2.1, reproduced below for the convenience of the reader:

**Exhibit 2.1: Affiliate Marketing Channel**



We would therefore argue that the dyadic nature of transaction cost theory is not scalable to a domain such as affiliate marketing as it fails to capture the complexity of the governance structure required. We should also note that Exhibit 2.1 is our initial illustration of the roles in the affiliate marketing channel. A large degree of the complexity in the channel is the result of efforts by the merchants to accommodate multiple affiliate business models through multiple commission structures and tools. Figure 4.1, shown below, is perhaps an illustration with more general applicability.

The primary tool offered by transaction cost theory to manage this complexity is governance mechanisms. While attempts by researchers such as Wathne and Heide (2000) to create a taxonomy of governance mechanisms may help to better organize the field, the issue remains that agency theory and transaction cost economics “view relationship management as a problem of deploying control mechanisms to manage partner opportunism, with the overall goal of minimizing governance costs” (Stump and Heide 1996, p. 431). One major problem with this description is that it focuses on the potential for negative actions on the part of partners, ignoring the potential for positive, innovative contributions. The role of partners can be much more than simply delivering a particular good or service according to strict guidelines defined by the principal. What is missing is what is increasingly presumed by many newer theories

such as ecosystems and platforms as the ideal desired outcome of the activities of trading partners: innovation.

Research on ecosystems and platforms (Gawer and Cusumano 2002, Messerschmitt and Szyperski 2003, Iansiti and Levien 2004a and 2004b) acknowledges the role of participants of the channel not simply as performing a hired service, but as taking an active role in perpetuating the growth and development of the ecosystem. The keystone at the center of the ecosystem recognizes that no one firm can satisfy all customer needs, and therefore creates a platform which enables external contributors to build new functionality or to open new channels in concert with the core products and services maintained by the keystone. This research has roots in several other streams of research such as user innovation, where the core firm relies on contributions from end-users (Jeppesen and Molin 2003, Prugl and Schreier 2006, von Hippel 2001); and open innovation (Chesbrough 2003, Gassmann 2006, West 2003) which emphasizes the importance of opening the innovation process in a company so that innovations created internally can find new external channels and markets, and the company can address its core customers' unmet needs with solutions from outside the firm.

However, we have found few studies focusing on the issue of control in these types of dynamic ecosystems with scarce exceptions (Markus 2007, West and O'Mahoney 2008). West and O'Mahoney (2008) identified one of the key issues we have observed in our research: the tension between control and growth. The researchers found that the more control core firms tried to exert over the direction of the community of contributors, the more they restricted the community's ability to grow; thereby highlighting a need for a balanced equilibrium between control and innovation. This tension between the conflicting desires of the core to encourage innovative contributions from participants in the ecosystems, while maintaining a degree of control over their activities and over the direction of the ecosystem is one of the core issues tackled in chapter 3.

Another key attribute to a healthy ecosystem is a mechanism or mechanisms for the core firm to extract some value from the activities of third party participants. Chesbrough and Appleyard (2007) emphasize the need to balance value creation with



value capture. They state, *“If companies cannot find ways to profit from their innovation activities in open initiatives – through deployment, hybridization, complements, or self service, they cannot sustain their participation in those initiatives over time* (Chesbrough and Appleyard 2007 p. 69).” Value appropriation is an element of control which needs to be considered carefully, since efforts to tax the ecosystem too greatly could lead to rejection by the external contributors.

One of the key challenges for ecosystems, therefore, is to give contributors the tools they need to support their activities and to make a profit, while at the same time maintaining the health of the keystone and of the ecosystem as a whole. The success of the overall ecosystem depends on the success of the individual contributors, without overly taxing contributors for their association with the platform (Iansiti and Levien 2004a).

We were given the opportunity to test these theories in a distinct domain when we were engaged in an international project for a prominent manufacturer of business software. The project involved 3 Danish partners and 2 international partners, including ESADE. There were five tracks in total which were primarily technical; our track was the exception, as we were engaged to explore “organizational implementation and partnerships”. This research, similar to our efforts to analyze the affiliate marketing domain, began with a practical question posed by the Software Vendor: how is the current channel of external partners organized, and what other models exist which might make this organization more efficient?

We began our research by looking for frameworks that could help us structure the channel, but had difficulty finding standard models which could accommodate such a particular case. As a result, we began by looking at governance mechanisms, similar to our affiliate marketing study, but rather than focusing solely on the four from Wathne and Heide (2000), we allowed the categories to emerge from our observations. This led to the first research question in chapter 3:

**RQ 3.1** What are the primary platform mechanisms required for the coordination and control of technology ecosystems?

We respond to this question in figure 3.1 (reproduced for the convenience of the reader below), and in the subsequent description of a typical process from development, through marketing, sales, and implementation:

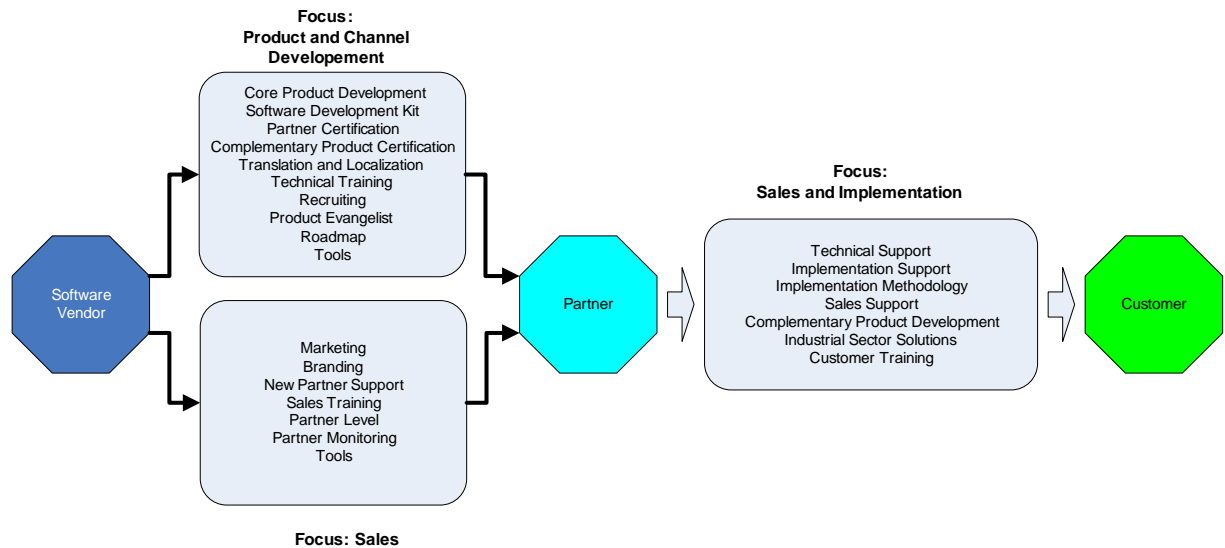


Figure 3.2. Platform mechanisms in the software ecosystem

We believe this taxonomy of governance mechanisms does fill a gap in the literature identified earlier, namely that there is a lack of frameworks describing what a complex development, sales, and marketing channel looks like. We hope that the rich data set which we have summarized in chapter 3 and included in more detail in the appendices may make some contribution to the research literature. Nevertheless, there are important limitations of this approach in terms of theoretical contribution. These are the mechanisms identified for this particular ecosystem, and which may have application to similar types of companies. Nevertheless, this analysis on its own we believe insufficient for exploring the issue of how keystones balance the forces of creation and control. Additionally, we must consider the issue of the extreme complexity of the many different types of partners pursuing different activities, an issue which we refer to as “heterogeneity” in our analysis. We therefore proposed our second and third research question:

**RQ 3.2** How do platform mechanisms interact to foster creativity and innovation, and ensure value appropriation and control in technology ecosystems?

**RQ 3.3** How do incentive and control mechanisms accommodate ecosystem heterogeneity?

Based on our analysis, we produce 9 primary findings which we have observed in our ecosystem, and which we believe may have general applicability to other ecosystems. Further research may serve to convert these findings into concrete propositions which may be tested in other domains. These findings are detailed in table 3.3, where we elaborate on their applicability to each of our three research questions. These findings may be summarized as follows:

<b>Table 5.1: Chapter 3 research findings:</b>	
<b>Finding</b>	<b>Description</b>
3.1a	Control infrastructures in technology ecosystems can be graduated, with greater value offered to complementors in exchange for submitting to higher levels of control by the core.
3.1b	To embrace heterogeneity, technology ecosystems can develop internal currencies to enable: i) common measurement standards to assess heterogeneous accomplishments; ii) multiple paths through higher graduations of recognition; and iii) horizontal mobility through the ecosystem.
3.2a	Technology ecosystem participants self-select themselves through higher levels of control.
3.2b	The decision to self-select through higher control levels is similar to a market transaction. Ecosystems participants offer or forfeit something in exchange for some additional value.
3.2c	Although distinct, creation and control mechanisms should be complementary, and are often interdependent and mutually enabling.
3.3a	Control infrastructures function as search, filtering, and coordination mechanisms to aggregate heterogeneous, fragmented and specialized contributions into a more cohesive ecosystem.
3.3b	Control infrastructures serve to reduce quality variance for both complementors and their complements as they self-select themselves through higher graduations of control.
3.4	The ecosystem core confers legitimacy and status to participants and complementors on the periphery at graduated levels. As complementors fulfill the requirements of the higher certification levels and come under greater influence of the core, the core confers greater legitimacy and status.
3.5	Technology ecosystem cores can purposefully construct infrastructures and explicit market based mechanisms and simultaneously cultivate intrinsic community based norms and competencies to affect greater cohesion.

Our intention with this analysis is to help advance the state of the art in several key areas, which we then expand upon in chapter 4, where we attempt to rationalize the two separate empirical domains and the two separate theoretical treatments; to elaborate on the themes introduced in chapter 3; and to present additional findings based on our analysis. The research questions for chapter 4 are as follows:

**RQ 4.1:** What aspects of ecosystems/platforms as a new organizational form are explained by transaction cost economics and agency theory?

**RQ 4.2:** What additional explanatory value is provided by platform/ecosystem theory?

**RQ 4.3:** What additional conceptual development is needed?

We first engage in a detailed qualitative analysis of each of our two domains along the primary dimensions of transaction cost economics: asset specificity, transaction frequency, environmental uncertainty, and behavioral uncertainty. Based on our analysis, we conclude that TCE is generally effective in its explanatory value for analyzing the most effective governance form for a dyadic relationship, including hold-up costs and partner lock-in, the completeness of contracts, and issues related to the monitoring of exchange behavior. However, we have found that TCE does not address key elements considered by firms in choosing the appropriate governance forms such as the independent agency of the parties, value creation, and innovation, for example. We refer also to prior research on motives for inter-organizational networking listed in table 1.2, which include many additional factors. In a similar vein, we have made observations in agreement with Santos and Eisenhardt's (2005) assertion that the direction of causality is not clear, and that the levels of some of the key dimensions may be a result of the chosen governance form, not vice versa.

Moreover, we have argued that while the TCE literature views the role of the principal as setting the rules of the game in contracts, and then ensuring the compliance of agents, the new literature on ecosystems and platforms views the flow of control not as uni-directional compliance but rather bi-directional inter-dependence, and the resultant ecosystem is developed through a combination of the intentional design of the core and emergent design through the efforts of many external actors. Consequently, while the primary objective of traditional governance theory is *control*, ecosystems and platforms are concerned with both ensuring *control* and enabling *creation*.

An additional key concern with the use of TCE in our research is its dyadic focus on inter-firm relationships. In contrast, we have observed each core firm managing relationships with multiple, heterogeneous partners through a graduated system of

self-selected control levels, as well as multiple value appropriation mechanisms. We have described this as the “solar system model”, and represent it visually in Figure 4.1, shown below:

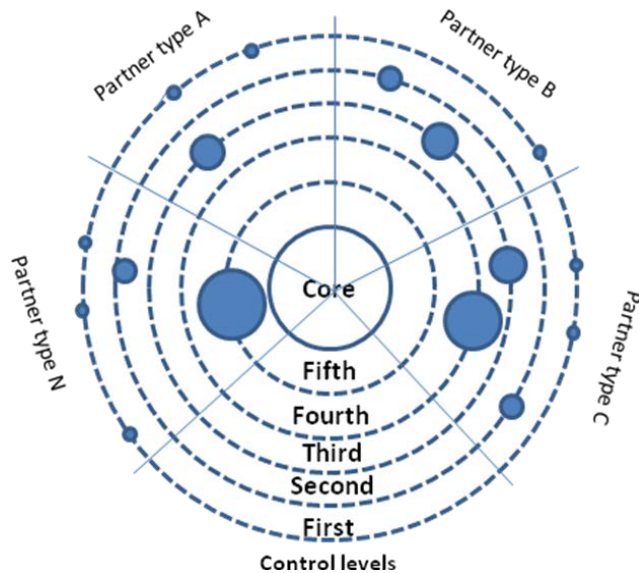


Figure 4.1: Solar system model

Thus while TCE considers a single dyadic relationship, we have observed systems of graduated control to which ecosystems participants self-select. Effectively, each level of control may be considered a distinct hybrid governance form driven to a large degree by different degrees of transaction frequency and asset specificity. The self-selection aspect is critical as well, as it emphasizes the autonomy of the various parties, as opposed to considering a governance form the inevitable result when certain conditions exist. So while TCE sees a more integrated structure as resembling a hierarchy, the autonomous selection of control level ensures that this is still essentially a market decision.

We have seen from our two domains as well as from prior studies that a given ecosystem may support hundreds, thousands, or even millions of participants. For most core companies in this situation, maintaining a distinct contractual relationship with each of these participants would be prohibitively costly and would limit the ability of the ecosystem to scale. On the other hand, implementing a standardized structure which treats all types of activity equally would limit the flexibility of the ecosystem and

the ability to incorporate new innovation. What we have observed in each of our domains, therefore, is a program of relationship types which may be graduated, and which additionally may evolve over time as new types of partners and new activities emerge.

We propose several additional findings in chapter 4:

<b>Table 5.2: Chapter 4 research findings:</b>	
<b>Finding</b>	<b>Description</b>
4.1	TCE has explanatory value for the choice of a hybrid/network governance form, but excludes many of the key factors which determine (and result from) this choice; the levels of some factors may be the result of the choice of governance form, not vice versa.
4.2	In contrast with a dyadic focus on each inter-firm relationship individually, core firms in an ecosystem manage their relationships with multiple, heterogeneous partners through a coordinated portfolio of distinct relationship types which correspond to the various partner roles, and which may be graduated in nature. We have called this the “solar system” model.
4.3	Core firms may support different types of partners by creating multiple tools, each of which supports a different type of partner activity. New tools, in turn, may enable new types of partner activities.
4.4	While multiple tools may support a variety of partner activity, multiple value appropriation mechanisms allow the core to extract value from a wider range of partner activity.

In section 4.4 we summarize additional themes which emerged in chapter 3 and which we believe to complement the traditional economic discourse. These include:

- external value creation and innovation
- the graduation and self-selection of control mechanisms
- the treatment of heterogeneity and variability
- transfer of legitimacy and status
- the co-existence and interaction of market and community mechanisms.

We expand on these themes in the Business Software ecosystems, and additionally explore these themes in the Affiliate Marketing context in order to compare and contrast their applicability to other ecosystems besides business software.

## 5.1 Research Agenda

In this section we will discuss some ways in which we think researchers may extend our findings.

**Affiliate marketing:** We have conducted a study of 136 one-to-many affiliate marketing programs in Spain, with observations for four primary governance mechanisms. Overall conclusions are that there are a limited number of restrictions in the formal contracts, and that merchants tend to accept the majority of affiliates into their programs. We have found that monitoring of affiliate activities tends to be rather lax, focusing primarily on measuring performance in terms of visits, leads, and sales, but paying little attention to how the merchant's brand is represented by affiliates; in other words, there is scarce monitoring of affiliate behavior. As a result there is a risk that affiliates may engage in behavior that could harm the merchant's brand. Additional research could analyze whether these findings could be extended to other markets, or if in fact other markets have more effective methods of monitoring behavior which could be applied to the Spanish market, perhaps through the application of newer technological innovations.

**Graduation and self-selection of control mechanisms:** We have observed several levels of control in each of our ecosystems, and have called into question the dyadic assumptions of transaction economics in favor of a more complex program of relationships with multiple, distinct hybrid forms for the same economic activity, which we have called the Solar System model of governance. There are several potential ways to extend this analysis. First, this model is admittedly a static model of governance. It does not currently explicate the flows between parties, and the co-creation activity which exists (Sarker et al. 2012). A more robust process model could be developed from the base that we have established. Second, the model is able to explain the levels of control for each set of complementors for a given ecosystem, but does not contemplate whether a model is the most effective model for the ecosystem. For example, we have observed three different approaches to control in section 4.4.4, ranging from the open source model of community-based development, to a proprietary software product which exerts a high degree of control. We found that the Software Vendor in our sample pursues a middle ground between these two extremes of control. Further research could explore the antecedents which determine the most appropriate form of control, and the contingencies which apply to specific governance mechanisms under each regime. Finally, we have studied two different types of ecosystems in this thesis, which we call Strong Core (Business Software) and

Fragmented (Affiliate Marketing) in section 4.2. With further theoretical development one could develop an ecosystem typology to build contingencies for platform mechanisms deployment.

**The treatment of heterogeneity and variability:** In this thesis we have made detailed observations of the heterogeneous nature of the two distinct ecosystems we have studied. In exhibit 2.1 we describe the heterogeneity of affiliates based on the different business models they use and the various tools they apply in their promotional activities. In table 4.3 we describe the various combinations of activities and domains which complementors may engage in. We have also indicated governance mechanisms which could aid the complementors in their efforts according to these domains and activities. Further empirical analysis could explore new domains in order to gain a deeper understanding of heterogeneity in different contexts, and the implications for governance mechanism development. Furthermore, this analysis is primarily descriptive. Additional theory development could suggest a more prescriptive model of actions that might be taken to create a more effective match between different types of complementors and the governance mechanisms which support their activities.

In the following section we make specific recommendations for managers of core firms based on our findings.

## 5.2 Implications for Managers

We began this chapter describing a business challenge for managers of affiliate marketing programs. Our study of the Business Software ecosystem likewise originated with a challenge from the core firm to develop a deep understanding of the current business model for the partner channel, and to study competing models. In chapter 2 we concluded with implications for managers of affiliate marketing programs. The following are additional recommendations for core firms in managing a business ecosystem based on our additional findings in chapters 3 and 4:

- **Design for maximum heterogeneity.** As we have found throughout the thesis, the greatest advantage to relying on complementors is that they can target niches which would be difficult or impossible for the core firm to reach on its



own, and that the health of these complementors affects the health of the overall ecosystem. In section 4.4, for example, we discuss various ways for the core firm to enable heterogeneity, ranging from a market approach to giving complementors the freedom to choose their particular niche, to the core's direct involvement in giving complementors exclusive access to particular sector or type of activity. Although our focus has mostly been on downstream complementors, Adner and Kapoor (2010) have also found that firms need take into account both upstream providers of components as well as downstream providers of complements.

- **Take a proactive approach to understanding and balancing tensions such as that between creativity and control.** In the future research section we discuss the need for managers to develop strategies to deal with salient tensions in their ecosystem (Smith and Lewis). Managers should gain a deep understanding of the needs of complementors so that they may provide the right incentives to help them develop their own activities, while not limiting their ability to compete through overly restrictive control measures. There is no silver bullet for achieving this balance, but communication seems to be the key. West and O'Mahoney (2008) have discussed the importance of transparency and accessibility in the pursuit of this balance. We have seen core firms in both ecosystems maintain close contact with complementors through direct contact with account managers, but also through web forums, advocacy groups, and industry conferences.
- **Match creation and control mechanisms to the needs of a diverse range of complementors.** Complementors vary in many ways as we detail in section 4.3. As we show in figure 4.1, different types of partners may require different types of incentives and control mechanisms. In the Business Software ecosystem, for example, independent software vendors are primarily focused on the creation and sale of software complements. Some mechanisms which appeal to these types of complementors include development tools like software development kits, official certification of software complements, and priority listings in software directories. Value added resellers on the other hand

are more focused on client implementations, and might benefit more from co-marketing and co-branding efforts, standardized implementation methodologies, and sales training. We also found varying partner levels to be an effective way to incentivize partners to grow, to tie the partners more closely to the core, and to reward successful partners with increasing legitimacy and status.

- **Performance is more than sales.** One key finding in both ecosystems is that complementor performance is primarily measured through the number of transactions completed. In the case of affiliate marketing this could mean visits, leads generated, or product sales, and for the Business Software ecosystem this includes sales of the core software product. However focusing solely on transactions may undervalue, for example, complementors focusing on strategic niches which represent strong potential future growth, or additional revenue from training and customization in software implementations (in the case of Business Software). This singular numbers focus also may ignore key quality indicators such as customer satisfaction, repeat sales, and referrals. One of our key findings in the affiliate marketing case, for example, is that merchants tend to focus solely on sales but not how these sales are achieved, which could be due to spam or other unethical practices. We therefore recommend that core firms complement a quantitative approach to performance measurement with a qualitative approach by observing other critical factors.
- **Take a reciprocal, flexible approach to value appropriation.** In finding 4.4 (at the end of section 4.3), we state “While multiple tools may support a variety of partner activity, multiple value appropriation mechanisms allow the core to extract value from a wider range of partner activity”. The core firm should be vigilant in its identification of new ways to extract value from partner activity, but must be careful not to overly tax the activities of complementors. One solution to this dilemma is to provide tools which both enable complementors to achieve higher rents, thus allowing the core firm to take a percentage of a larger pie. Apple has been quite successful at this strategy by creating a

mechanism which makes it easy for app developers to charge for in-app purchases, to post banner ads (through their iAd service), and through the Game Center, Apple's social gaming network.

- **Plan for the evolvability of the platform:** It is clear not only from our findings but from observing other ecosystems, that planning for the growth and evolution of a platform is critical to ecosystem development. There is significant risk in undertaking a unilateral strategy, where the core firms set the rules and partners are expected to toe the line. The most successful platforms take a reflexive approach to governance, where they experiment with new functionality, observing the reaction of external contributors and customers. In section 4.4.6 we discuss our finding that the actual governance of our ecosystems tends to be the result of *purposeful action by the core*, with *emergent responses on the periphery* (Finding 3.5, chapter 3). There are specific steps that companies can take to involve complementors as the platform evolves. We mentioned above the importance of communication through direct contact, forums, and conferences. There are also mechanisms such as training and product roadmaps, and in software designing to ensure forward and backward compatibility.

### 5.3 Future Research

Based on our analysis of two distinct domains using various theoretical lenses, we have identified three primary areas where we feel the research literature is complete, and which we propose as part of a plan for future studies. These include: 1) research on domains which we denote as “galaxy” ecosystems, consisting of multiple competing platforms; 2) research exploring the relationship between enabling dualities and conflicting dyads, including the triggers which cause transitions between the two states, and management strategies for dealing with these tensions; and 3) additional research on organization boundaries with a focus on boundary-spanning organization forms, including theory development in areas which have received less attention to date.

### 5.3.1 Multi-platform “galaxy” ecosystems

We begin our discussion with an observation regarding the nature of digital ecosystems which have been studied in the literature to date, namely that the majority of empirical research on ecosystems and platforms analyzes activity surrounding a single, strong core firm, what Provan et al. (2007) refer to as “egocentric networks”. The problem with this level of analysis is that it downplays the fact that these platforms exist in a competitive context, namely that there are other platforms vying for the attention of partners and customers. Basole (2009) for example describes the fragmented mobile ecosystem, where firms must maintain relationships with a wide variety of other firms as the balance of power is continuously shifting. The affiliate marketing ecosystem studied in chapter 2 is one such domain, where we observed the complexities for affiliates of maintaining a relationship with multiple platforms, and for platforms to maintain relationships with multiple affiliates who are constantly lured by offers from competing platforms. We suggest that these types of ecosystems represent the rule rather than the exception, and that additional empirical studies are needed to understand the forces at work in such configurations.

In chapter 4 we described the Business Software ecosystem as having a strong core firm, and the Affiliate Marketing ecosystem as fragmented. The discussion of how the core firm in the Business Software ecosystem manages its exchange relationships has led to the view of multiple hybrid forms co-existing. If we consider the fragmented Affiliate Marketing system, and shift the focus to the affiliates (the participants rather than the core), we encounter even greater complexity. An affiliate’s business requires combining assets in the form of tools and content from multiple platforms simultaneously. From the affiliate’s perspective, the issue of how to combine these elements seamlessly is paramount. Therefore, the affiliate must consider how to participate in *multiple hybrid forms from multiple platform providers simultaneously*.

Examples of ecosystems in the literature include those of Wal-Mart and Microsoft (Iansiti and Levien 2004a, 2004b), Google and Qualcomm (Gawer and Cusumano 2008), Procter and Gamble (Chesbrough 2007, Huston and Sakkab 2006) and Cisco (Li 2009). Neither are the examples limited to profit-seeking enterprises. Gawer and Cusumano (2008) and Chesbrough and Appleyard (2007) analyze the case

of the open-source software platform Linux. While operating in a diverse collection of industries, what these ecosystems have in common is that the analysis is typically focused on a single keystone, and the ecosystem is defined from the perspective of this firm.

However, we assert that in many if not most ecosystems, there is no one dominant platform but rather a heterogeneous, constantly evolving array of platforms which both compete against and complement each other. For example, software programmers must adopt strategies to maintain compatibility with multiple user interfaces and operating systems for desktop computing devices as well as a large variety of mobile devices and mobile operating systems; videogame developers must decide whether to create content for a single hardware platform or deal with the complexities of optimizing their content for multiple platforms; hotels and airlines must navigate a large number of reservation systems, online travel sites, and travel agents (each of which has its own proprietary system) in promoting their offerings. All actors in a multi-platform ecosystem must find ways to navigate the complexities of their environment, but the most successful niche players are able to combine elements from the various platforms to create their own unique solutions.

Basole (2009) provides an important case in point through an analysis of the converging mobile ecosystem, identifying 14 distinct segments and concluding that four of these segments create the technological foundation for the ecosystem. However, they also concluded that a single hub segment has yet to emerge, and that successful firms must “form the right balance of relationships with a variety of players” (p. 13). Similarly, Iyer et al. (2006) perform a network analysis of the software ecosystem. The authors identify several hubs, akin to keystones, including IBM, Microsoft, SAP, etc. They describe the case of Vignette, a company which creates products combining elements from multiple platform providers; Vignette maintains a close relationship with Microsoft to ensure interoperability of its product with .NET and Java, while also partnering with IBM and Accenture for system integration. This research would seem to indicate that a broader view of business ecosystems consisting of multiple keystones and platforms may complement the company-centric view. Although the focus on links between companies and the roles that firms play in the

ecosystem yields important insights, we suggest that a more detailed discussion of the specific mechanisms which ensure the health of the ecosystem would complement these contributions.

Interorganizational networks have been studied in other contexts, with a growing preference for network analysis (Wasserman and Faust 1994). The advantage of network analysis is that it can provide a view of the “whole network”, studying the impact of multilevel actions and structures on collectivities of organizations (Provan et al. 2007). A detailed review of network analysis research is outside of the scope of this thesis, though Provan et al. (2007) provide a comprehensive review of the literature. In this review, the authors found that the vast majority of network studies focused on “egocentric networks”, or those networks revolving around a single keystone firm. Out of a survey of over 50,000 articles on networks, they found 26 dealing with whole networks. These represented a variety of industries with a large number devoted to health services, but also included other industries such as manufacturing, biotechnology, and video game development. Further, social network analysis focuses on “how strategic alliances, partnerships, and collaborations are formed in a network context and what impact network formation, structure, and participation have on firm performance, innovation, and market evolution” (Basole 2009, p. 146). We suggest that there is a need to for more research on the specific mechanisms which govern the creation and sharing of value in hybrid organizational forms. These constructs are central to the ecosystem literature, yet their study has generally been anecdotal to date, and typically focus on activities surrounding a single keystone.

In chapter 4, we have discussed the dyadic relationship model at the center of transaction cost economics. In Finding 4.2 we described a second “solar system model” with a strong firm at the core and multiple types of partners contributing to the success of the ecosystem. In the following discussion we analyze a third view which we believe merits further study. In this view there are multiple platforms in a given ecosystem. Niche players must choose whether to work with a single platform, to customize their offerings so they are compatible with multiple platforms, or to combine elements from multiple platforms in creating their own offering. This third view we call the “galaxy” model since it assumes the existence of multiple “solar

systems". The implications for governance on the part of the various keystones in this model are significant as well, since they must decide whether to create their own proprietary mechanisms (tools, standards, etc.) in an attempt to lock in complementors to their platform, or to embrace more open, shared mechanisms. The risk of focusing on proprietary mechanisms may backfire, since open standards make complementor investments more scalable across platforms. This model is best represented by an ecosystem such as the mobile telephony sector, in which many types of players including mobile operators, handset manufacturers, application developers, media companies, etc. must manage relationships with multiple competing platforms, each of which is in a state of constant and rapid evolution.

There is also the decentralized model, or open model, which may be seen as a subset of either the solar system or galaxy model (depending on whether or not there is a single, strong central core). In the open model, standards for compatibility are not determined by a single, central firm but rather by a combination of negotiation and market forces among ecosystem members (Langlois and Robertson 1992). Prime examples of the open model include the personal computer with its open architecture, the Internet based on open standards, and open source efforts such as Linux. Additional research is needed to test whether the findings from this thesis are valid in these new models of organization.

We discuss at various points in the thesis the importance of planning for the evolvability of the platform, and we observe that ultimately governance is reflexive in that it is determined by purposeful efforts from the core firm and emergent response from complementors. Nevertheless we acknowledge that the model in Figure 4.1 is fundamentally a static one. An important area for future research would be to develop process models for the various types of ecosystems, identifying the contingencies which might result in one type of ecosystem or another (solar system, galaxy, open) and the resultant implications for governance considerations, as well as the flows between ecosystem entities for each type.

### *5.3.2 Paradox, tensions, dualities and dualisms*

Smith and Lewis (2011) make a laudable effort to classify organizational tensions into 4 categories, including exemplars of each: learning, belonging, organizing, and

performing. They further suggest that tensions operative, both within and between these categories. While this research may help to organize discourse on a macro level, we have made an effort to provide empirical observations of specific tensions on a more granular level.

The *control-creativity* tension (also called *control-autonomy* in studies subsequent to our analysis in chapters 3 and 4) has been addressed conceptually in the literature (Yoo et al. 2010, Tilson et al. 2010, Tiwana et al., 2010), and we have attempted to extend this analysis through our own observations and subsequent findings. In a recent transcript submitted to Organization Science (currently in the third round of revisions), we extend this analysis to include 2 additional tensions. We would suggest that the discourse on tensions in digital ecosystems is still relatively immature, though there have been recent attempts to explore specific tensions (Tilson et al. 2010, Tiwana et al. 2010). The following summarizes the three tensions we have identified:

1. **Control-creativity:** One of the best understood tensions in ecosystem governance is the need for an effective balance between control and creativity (Tiwana et al., 2010). Organization theory argues that creativity is required when addressing uncertainty and solving previously undefined and novel problems (March, 1991). Control and coordination are required where the tasks are complex and the work is distributed across a disparate set of actors who work interdependently, and expose themselves to various forms of transactional risk (Adler and Chen, 2011). Where creativity is about multiplying options, control is about identifying and mitigating elements that can threaten the creative endeavor; in the simplest terms, the objective is to increase desired variance while reducing undesirable variance simultaneously.
2. **Standardization-variety:** The core of the ecosystem must be highly standardized, enabling a high level of reusability in myriad contexts. Complements, by contrast, must embrace heterogeneity and permit the customization required to address the niches being served, while maintaining substantial evolvability over time (Baldwin and Woodard, 2008). This has been called the 'paradox of change' by Tilson et al. (2010 p. 6), where opposing logics of stability and flexibility operate simultaneously across infrastructural layers



and components. Change and variety are enabled through the existence of a predictable platform core that requires common, standardized interfaces and connection protocols. Without predictable standards, complementors have no assurance of the eventual scalability and reuse of their innovations across different contexts and users.

3. **Individual-collective:** Technology ecosystems must allow for a variety of extrinsic motivations pursued at an individual level. At the same time, ecosystems require coordination and cohesion, permitting the emergence of public collective goods (Ibarra et al., 2005). The problem is similar to organizations; individual motivations must be harnessed for expertise, creativity and generativity. Yet individual incentives must also be subjugated to the benefit of a cohesive whole (Smith and Lewis, 2011). By definition, ecosystems function like quasi-marketplaces where complementors channel specific expertise to occupy defendable, often exclusive, niches. As such, self-interested behavior is not only assumed, but necessary in a for-profit commercial platform. Nevertheless, a lack of platform cohesion may limit the benefits of standardization, scale, and direct and indirect network effects. The challenge is to establish and maintain platform unity without having significant adverse effects on the creative efforts of niche participants. Ecosystem participants must somehow, either knowingly or unknowingly, subsume their self-interested conduct to some form of direction giving (Demsetz, 1997) that orients their behavior towards the desired collective outcomes of the platform.

In section 4.5 we synthesize work by Smith and Lewis (2011) on latent and salient tensions, and that of Farjoun (2010) on dualisms and dualities. We observe 3 specific exemplars in the Business Software ecosystem, and one in the Affiliate Marketing ecosystem, and analyze instances which manifest as latent, complementary, and enabling dualities, and others which appear as salient, contradictory, and disabling dualisms. In addition, we comment of possible triggers which cause transitions from positive dualities to conflictive dualisms. While we intend our analysis as a first step to add empirical definition to these emerging theories, thus far we have not ventured to offer a more prescriptive component for dealing with these tensions.

While we have adopted Smith and Lewis' (2011) constructs of latent vs. salient tensions, including their suggested factors which render tensions salient, the authors' take the discussion a step further, suggesting that salient tensions can lead to different types reinforcing cycles. The researchers propose "a dynamic equilibrium model of organizing, which suggests that tensions are inherent and persistent and depicts how purposeful and cyclical responses to paradox over time enable sustainability—peak performance in the present that enables success in the future" (p. 382). This model assumes that any response to salient paradoxical tensions leads to a reinforcing cycle which may be either negative and vicious, or positive and virtuous. Negative vicious cycles result primarily from avoiding change due to "cognitive and behavioral forces for consistency, emotional anxiety and defensiveness, and organizational forces for inertia" (p. 391).

Smith and Lewis (2011) propose two primary management strategies for dealing with salient tensions in order to enable virtuous cycles: *acceptance* and *resolution*. Acceptance involves viewing tensions not as an either-or dilemma, but rather as an opportunity that requires "attending to competing demand simultaneously" which "requires cognitive and behavioral complexity, emotional equanimity, and dynamic organizational capabilities" (p. 391). The objective is to change the actors' way of thinking to consider both seemingly conflicting possibilities rather than reacting defensively and forcing an either/or scenario. Cognitive and behavioral complexity and emotional equanimity are about changing individual attitudes toward the tensions, while dynamic capabilities represent a response at the organizational level. According to the authors, "dynamic capabilities provide collective tools to enable organizational leaders to respond to environmental shifts and, in doing so, enable members to be more open and accepting of the dynamic environment of paradoxical tensions" (p. 392).

Resolution strategies entail responding to paradoxical tensions either by splitting and choosing between competing tensions, or by finding synergies between them. Smith and Lewis (2011) suggest that splitting and synergies can be used simultaneously through "purposeful iterations between alternatives in order to ensure simultaneous attention to them over time" (p. 392). In other words, actors make choices in the

short-term between alternatives while accepting tensions in the long-term. The researchers claim that this requires “consistent inconsistency” as decisions are continually changing, alternating between one aspect of the contradiction and the other. Consistently inconsistent behavior embeds tensions within the organization’s strategies, rules, processes, and identities. Smith and Lewis (2011) claim that the objective of management strategies to deal with salient tensions is sustainability through three mechanisms: enabling learning and creativity, fostering flexibility and resilience, and unleashing human potential.

The dynamic capabilities model is an effort to structure a disparate set of literature dealing with similar phenomena. According to the authors, “At its core a paradox theory presumes that tensions are integral to complex systems and that sustainability depends on attending to contradictory yet interwoven demands simultaneously” (p. 397). From the beginning of this thesis we have observed the existence of certain tensions between the core firm and third-party participants in our two domains, so we clearly concur with this observation. We have focused primarily on the “control-creativity” tension, but earlier in the section we identify the additional tensions “standardization-variety” and “individual-collective”. Once we accept the ubiquity of paradoxical tensions, and conclude that tensions must be managed rather than avoided, the question then is to form a plan for future research in order to extend paradox theory. Smith and Lewis (2011) propose three primary areas for paradox research relating to tensions in platforms and ecosystems: explore additional methodologies for exploring tensions; consider the message to practitioners regarding paradoxes, and pursue a more prescriptive approach; and expand the use of paradox as a tool for theorizing.

### 5.3.3 *Organizational boundaries*

Santos and Eisenhardt (2005) observe that transaction cost economics and related exchange-efficiency theories have dominated the discourse on organizational boundaries. The researchers propose a broader view, including four conceptions of organizational boundaries: *efficiency*, focused on the legal-ownership view of boundary decisions, with research in this area primarily through transaction cost economics ; *power* which deals with the sphere of influence of the organization and

whose theoretical roots rely on resource dependence; *competence*, which focuses on a firm's portfolio of resources and is based on contingency theory and the resource-based view of the firm; and *identity* which addresses the mind-set through which the organization defines itself, based on managerial cognition and organizational identity theory.

As avenues for future research, the authors first suggest a move away from exchange efficiency studies which tend to focus on "atomistic make-or-buy decisions in the context of established industries or stable parts of organization" (p. 503). In addition, they propose an emphasis on more longitudinal and processual research which explores the relationships between different boundary conceptions. Third, is a move towards normative evidence and theories of the firm. Finally, they suggest an increased emphasis on "problem-driven" boundary phenomena, which we will discuss further below.

Santos and Eisenhardt (2005) further argue that research on organizational boundaries is typically theory-driven, however the current business landscape includes many non-traditional settings and new boundary decisions. They therefore assert (without discounting the value of theory-driven research) that an alternative problem-driven approach would lead to fresh theoretical ideas which are "out of the box" of known theory (p. 505). In fact, the Business Software research in chapter 3 originated not as a study to extend extant theory but rather as the expression of a business problem experienced by the core firm, namely "what is the business model of the software development and implementation channel?" The mere fact that the central orchestrator of this channel need ask the question of how it is organized and functioning in actuality is an acknowledgment that not all factors are within the central firm's control, but rather are the product of their deliberate efforts at organization combined with the emergent organization of the community. This type of hybrid form lends itself more to an inductive exercise of theory development than a rationalization of extant theory.

Zott and Amit (2007) look at how business model design, which they describe as the design of an organization's "boundary-spanning transactions" impacts the performance of entrepreneurial firms. They claim that "organizational design should

extend beyond internal design to include a focus on the architecture of the transactions that a focal firm engineers with its partners, suppliers, and customers” (Zott and Amit, 2007, p. 194). The goal of their study is to explain how value is created and captured by firms. The authors operationalize and measure two types of business model designs, efficiency-centered and novelty-centered, and observe a positive relationship between novelty-centered business design and firm performance. Therefore, extending theory on boundary-spanning business models to include complex platforms and ecosystems may provide additional insights into our observed phenomena.

An additional observation from our research is that control systems for the domains studied are not static, but rather dynamic in nature. Traditional theorizing on transaction governance has emphasized variance theories, where transactional, institutional, or environmental antecedents change; and governance forms and control outcomes respond in some linear fashion (Klein et al., 2011). Thrane (2007) has investigated the possibility that different models of governance may be present for the same set of antecedent conditions, oscillating between several archetypes, or evolving with the maturity of the relationship, and thus offering preliminary evidence that governance archetypes may be both evolutionary and pluralistic in their fundamental logic. The topic of an evolutionary or dynamic view of ecosystem governance warrants additional research.

#### 5.4 Concluding remarks

Our research has been an iterative process of experimenting with different theoretical lenses in our efforts to explain these phenomena. We began by analyzing our first domain with transaction cost economics, as the predominant theory applied in prior research to explain how economic activity is organized between firms. However, we found this theory to have certain shortcomings in its capacity to fully address our research questions. While researching our second domain, we therefore turned to the newer theories of ecosystems and platforms, stating our observations and conclusions terms associated with those areas of research. We finished our analysis with an attempt to rationalize the contributions from each theory, and to pave the way for future research. We make an initial foray into paradox theory, suggest

specific ways in which other researchers may extend our findings in section 5.1, describe implications for managers in section 5.2, and in section 5.3 we identify three primary areas for future study: multi-platform ecosystems, paradox research of salient tensions, and various theoretical lenses for studying boundary-spanning organizations.

Throughout the research journey, we have made a concerted attempt to focus on practical business problems, while grounding our research in extant theory. In this way we hope to both aid business managers in solving difficult issues, while making some small contribution to advancing the state of the art in the areas of management, information systems, and economics.

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## 7 APPENDIX: SUMMARY OF PLATFORM MECHANISMS

The following is a summary of the primary platform mechanisms identified in the study of the Business Software ecosystem analyzed in chapter 3.

### 7.1.1 Focus: Product and channel development

Core Product Development: The Software Vendor is responsible for the development of the core enterprise software suite, as well as the software development kit. The partner is responsible for configuring and customizing the core software for individual customers. Revenue from sales of software licenses is shared between partners and the Software Vendor.

Software Development Kit: The Software Vendor is responsible for maintaining the SDK, which contains the development tools for customizing the software and for creating complementary products. The SDK includes information such as the software architecture, entity model, security model, etc.

Partner Certification: As a condition for representing the Software Vendor's products, partners must have certain certifications (technological, functional, product, etc.), which are handled by training centers run by third parties.

Complementary Product Certification: Product certification is the responsibility of third parties with the direction of the Software Vendor. By certifying their complementary products, partners receive the "seal of approval" from the Software Vendor which helps differentiate the partner in relation to its competitors.

Translation and Localization: Adapting the core software to local languages and regulatory requirements is the responsibility of the Software Vendor. However, partners often make additional modifications to address perceived gaps in the localized solutions.

Technical Training: Technical training is the responsibility of external training centers with the certification of the Software Vendor. The Software Vendor also implements training programs in conjunction with universities.

Recruiting: Recruiting is the responsibility of the partner, though the Software Vendor influences the supply of qualified consultants through its university programs.

Roadmap: The Software Vendor maintains the product roadmap, which keeps the partners informed as to the timing of future updates and upgrades, as well as the specific changes to the software included in the updates/upgrades. This is a critical area since partners are responsible for maintaining compatibility between their complementary products and the core software.

Product Evangelist: Product evangelists are employed by the Software Vendor to promoting the core product to partners and customers, helping them understand the product roadmap including the benefits of new product features.

Product and Channel Development Tools: To support the relationship between the Software Vendor and the partners, the Software Vendor maintains an extranet which provides up-to-date information on the various platform elements such as the product roadmap, certification requirements, software development kits, the availability of complementary products, etc.

#### *7.1.2 Focus: Sales (relationship between Software Vendor and partner)*

Marketing: While the Software Vendor and partners engage in their own marketing campaigns, there are some co-marketing efforts where the cost is shared between the parties.

Branding: The Software Vendor is responsible for developing and maintaining the brand of the core software products. Partners are responsible for developing and maintaining their own company and product brands.

New partner Support: Third parties, with the support of the Software Vendor, maintain external centers to help train new, generally smaller, partners in marketing, sales, and product implementation issues. These centers are evaluated based on their ability to impact the sales growth of new partners.

Sales Training: Third parties are responsible for sales training with the support of the Software Vendor.

Partner Level: There are three partner levels which roughly relate to partner size. Higher levels include more extensive technical support, training, marketing and sales support, use of Software Vendor logos, and access to international projects.

Partner Monitoring: Partners are primarily monitored via the Software Vendor's extranet, where the partners report their license sales. There are also third party centers for comparing a partner's performance with channel benchmarks.

Sales Tools: The Software Vendor's extranet provides tools to report sales and to maintain information on a partner's sales pipeline. There are also requests for proposal for collaboration opportunities between international partners.

### *7.1.3 Focus: Sales and implementation (relationship between partner and customer)*

Technical Support: Technical support to the customer is the responsibility of the partner, however the Software Vendor may provide additional support depending on the partner Level.

Sales and Implementation Support: On most projects, the partner retains sole responsibility for selling and implementing the Software Vendor's solutions. However, on larger implementation projects the Software Vendor gives additional, direct support to the partners in areas such as sales, technical support and project management. On very large projects the Software Vendor takes on the role of primary contractor and subcontracts areas of the project to partners.

Implementation Methodology: The partner may use no methodology, the partner's own methodology, or the methodology developed by the Software Vendor. Consistent use of implementation methodology is critical as a way to reduce project time, increase project success, and reduce total cost of ownership.

Complementary Product Development: partners may create their own complementary products for customer needs which are not adequately addressed in the core product. There is a high degree of variation in size and scope of these products. The partner owns the software licenses for its complementary products, and is responsible for technical support, customer training, and for maintaining compatibility with future versions of the core software.

Industrial Sector Solutions: While these are also a type of complementary product, they represent much more comprehensive solutions that address a given industrial sector. These may be for a specific geographic region and a highly-focused industry



niche, or they may have broader application. Larger partners may develop solutions that become part of the core software product.

Customer Training: While the Software Vendor is responsible for creating the software manuals for the core product, the high level of customization and the large number of complementary products result in vastly heterogeneous implementations. Customer training is therefore ultimately the responsibility of the partners.

## **8 APPENDIX – SUMMARY OF 3GERP PROJECT AREA E: ORGANIZATION IMPLEMENTATION AND PARTNERSHIP MODELS**

June, 2008

### 8.1 Participants

Jonathan Wareham, ESADE

Josep Lluís Cano, ESADE

Paul Fox, ESADE

### 8.2 Introduction

The following is a summary of the research conducted for the 3gERP project in Spain under the direction of Jonathan Wareham and with the participation of Josep Lluís Cano Giner and Paul Fox. 12 interviews were conducted between September, 2007 and February, 2008. The interviewees included representatives from Microsoft Dynamics as well as Dynamics partners. Included in the latter category were both national partners focused on Spain, as well as International partners with operations in multiple countries. The goals of this exploratory research phase were to analyze the current Microsoft Dynamics ecosystem with a focus on the Spanish market, to offer normative guidance on how to improve the channel structure and processes, and to identify potential areas for further research. This summary will focus on two deliverables which have been completed: The Verticals Certification Process, and the Partner Structure.

### 8.3 Add-ons and Vertical Solutions

Partners can create what are called “add-ons”, or custom solutions for a particular vertical. This is a critical area for Microsoft and for the partners, since it has the potential to provide additional functionality in Dynamics which is specific to a particular industry vertical or region at a lower TCO. Add-ons may also include horizontal solutions such as taxation or payroll applications, for example. The partner who creates the add-on is the owner of the solution. These add-ons are first registered by Microsoft once they have been implemented with a minimum of 10 customers and have passed Microsoft’s quality control. Once registered, add-ons must meet certain requirements to become certified by Microsoft. All work required to develop the add-on, and to get it registered and certified is paid for by the partner.

Once an add-on is registered and certified, the partner negotiates a revenue-sharing agreement with Microsoft for further installations of the add-on. Normally, the partner receives between 60 and 80 percent of the revenue, and Microsoft receives the remainder. Add-ons are shared with other partners, locally and internationally, and the fee distribution is negotiated individually with each partner. However, this is done on a case-by-case basis and there are no guidelines provided by Microsoft to govern these transactions.

The investment required to develop and maintain an add-on is quite high compared to the potential benefit since the partner absorbs all costs related to development, registration, certification, and compatibility with new version of Dynamics. In addition, since each add-on is specific to a particular industry and often to a particular geographic region, it is difficult to generate sufficient sales volume to amortize these costs in the face of competition. This is particularly true for regional and national, small- to mid-size partners.

Therefore, small and mid-size partners must look to larger partners for vertical solutions, and they must negotiate fees with the large partner. However, the large partners do not have much incentive to share their vertical solutions, and some will only agree to a sharing arrangement if they do the installation themselves in order to ensure quality. Again, this is an area where Microsoft does not provide much guidance, nor do they usually take an active role in specific situations.

Microsoft has decided to allow as many verticals in the market as the partners wish to create. As a result, there can be as many as 200 construction verticals. Until recently, none of these verticals have received any particular seal of quality to say “this is the definitive, recommended construction vertical”, for example. As a result, it can often be difficult for customers to find an appropriate vertical solution. On the other hand, this system does afford partners a way to differentiate themselves from other partners through their vertical solutions.

The add-on certification process is another way for partners to differentiate themselves, and may offer the “seal of quality” that larger partners are looking for. The process is new however, and so far only 16 solutions have been certified (as of January, 2008). Once a partner is certified, they receive a ranking in the Dynamics solution finder and appear in the MS Dynamics Solution catalogue. This process is most relevant for larger international partners, who can leverage sales across a larger market.

Add-ons are often very narrowly defined, and vary from small, regional localizations, to horizontal applications, to complete vertical solutions. However, there is also an issue with terminology, since the term “add-on” is often used interchangeably with “vertical”, while only some add-ons represent a full vertical solution.

#### 8.4 Fee Structure

Revenue is shared between Microsoft and the partners in the following areas: software licenses, maintenance, and technical support. For licenses, partners pay Microsoft and bill the customer directly, receiving a margin between 35% and 50%. Licenses are generally charged on a per-user basis on a sliding scale based on volume. Licenses may be covered under a VPO (volume purchase order), or multi-site agreement. Discounts are applied to the license fee paid from the partner to Microsoft, before adding the partner’s profit margin to arrive at the final cost to the customer. In other words, the partner’s profit margin is applied to the net license fee after discounts. Partners also receive tables and objects “for free” in return for paying Microsoft a portion of the sales price.

The standard maintenance fee is 16% of the license fee. The partners receive a margin of 25% on the maintenance fee. Partners can charge more than 16% if they offer additional value-added services. Partners are responsible for supporting customers directly.

One issue raised by the partners is that there is no standard price established for add-ons, and therefore partners have free reign in establishing add-on prices. Partners suggest that there is a need for a pricing policy which takes into account the total cost to the customer – including the core application plus add-ons. In addition, there is no established model for sharing revenue either between Microsoft and the partner who creates the add-on, or between partners. Price has to be negotiated in each instance and in each new country when a partner wishes to use a particular add-on.

Similar to Dynamics licenses, the add-ons are charged per user. The problem is that under the current scheme, the price is designed to include the full functionality of NAV. For many add-ons, the customers do not need the full functionality of NAV in order to use the add-on. There is a similar problem for maintenance and support, which is charged as a percentage of the total price of the NAV and add-on package.

## 8.5 Recruiting

Recruiting and training are two topics which are closely related. According to the partners interviewed, if there were more trained consultants in the market, recruiting would be less of a problem. Also, once an employee is recruited, the general lack of personnel trained in Dynamics in the market means that it may take over six months for the average employee to be fully trained and productive, and therefore billable to clients.

Microsoft is trying to grow the ERP market by 25% every year, but the shortage of consultants contributes to salary inflation and also can produce projects with problems. Also, the rapid growth of the market means that there is a greater need for consultants than in a stable market. As much as half of a partner's workforce is contracted on a freelance basis in order to meet market demands, to make up for employees who are not as efficient as they should be, and to cover worker attrition.

Several partners also hire consultants with experience with other competitors' solutions (SAP, BAAN, etc.)

In discussing recruiting (and training) it is important to differentiate between technical people and consultants. Technical training can be given fairly easily, while finding and training consultants is more difficult. One technique used by a large partner is to recruit "business experts" with experience in a particular industry segment, then train them in the technical aspects of Dynamics.

## 8.6 Training of Consultants

Training is handled by external centers, certified by Microsoft, which are managed by third parties. However, many feel that this should be handled internally by Microsoft employees with extensive field experience, or at the very least monitored more closely. The main problem with this external training model is that it creates a conflict of interest for these "training centers", who also provide other Dynamics services such as programming support for other partners, creation and implementation of add-ons, and Dynamics implementations. Previously, training was conducted (and paid for) by Navision, and the partners hired these professionals. Currently the partners providing the training are often competitors of the partners who need their employees trained. In addition, the training centers charge high fees for training services, since this is a significant revenue stream for them. As a result, not only do partners need to recruit people in a separate process, they often train them internally rather than the alternative of paying their competitors high fees for training services, and risking losing their employees to said competitor.

Another criticism of the training programs is that they primarily address technical skills; there is a lack of training focused on "business" skills. Finally, while Microsoft has made some efforts to increase the number of training programs, primarily focusing on universities, there is still a shortage of well-trained consultants, both technical personnel as well as those with a business focus. The overall market would benefit from greater investment and attention from Microsoft in this area.

## 8.7 Activation of Partners

In general, partners are only able to run a profitable business once they reach a certain size. According to the partners interviewed, they become profitable when they have at least 15 people. Therefore, new partners have a very difficult time getting started. In many cases these partners may be aware of the technical aspects of Dynamics as applied to a particular industry segment, but may need help learning how to handle the business issues.

Partner Activation Centers are external entities whose function is to activate partners. In each training area, the partner comes in for a day and leaves with a business plan. They also do specific workshops. The Partner Activation Centers help the new partners on a practical level by participating in the sales process, helping to close a deal for example. They also help on a practical level by participating in implementations. However, they only sell services to partners, not to end clients. The client sees them as part of the partner's team. They are evaluated by Microsoft based on a comparison of partner sales before and after training.

This is another area, similar to training and recruiting, where Microsoft has allowed external parties to provide the service. However, like those other areas, there is a potential conflict of interest here, since these companies who are given the label "Partner Activation Center" are also certified Dynamics partners who provide other services, including development of verticals and Dynamics. So in the end, they are in competition with the new partners on some level. The research team was only able to interview one Partner Activation Center. Further research is recommended in order to gain a better understanding of the effectiveness of the model.

## 8.8 Relationship Between Partners

The general consensus from the partners interviewed was that there is more competition than cooperation between the partners, and that this atmosphere is encouraged by Microsoft. One partner stated "If you ask a partner who their biggest competitor is, they'll say 'another partner'". The implication is that there is more

competition between partners offering Microsoft Dynamics than with competitors offering other software packages, like SAP or Oracle.

Collaboration between partners seems to work best in situations where one partner needs special expertise for a particular project, and creates a joint venture with another specialized partner. However, the large partners do not have any incentive to help a small partner grow. Microsoft has helped the Partner Activation Centers create programs to help smaller partners, but other than that there is a lack of guidelines to help structure relationships between partners.

The perception is that currently Microsoft does not get involved at all in the relationships between partners. This is in contrast to the approach taken by Navision, who actively helped partners to connect and thereafter moderated disputes. Microsoft does not do this, in part for practical considerations: there are many more partners with Dynamics than there were under Navision. However, there has been a general request that Microsoft should create some basic rules for collaboration between partners.

On an international level, there are more incentives for partners to work together. AX has an organization called AXPACT and NAV has an organization called Partner Power. AXPACT is an association of international partners, who contact each other for international projects, and each partner performs its part of the project. Partner Power is more organized – there is a lead country which brings the project to the group and is incentivized to implement it. Each partner gets a percentage of each of the projects in the various countries. Within this structure, partners are incentivized to perform the implementation and to become the lead partner. Those partners who just perform their portion of the project but do not make the marketing or sales investment receive smaller margins because their costs are lower.

## 8.9 Certification of Partners

In order to represent Microsoft Dynamics products, partners must have certain certifications in various areas (technological, functional, by product, etc.), which are handled through training centers run by third parties (certified by Microsoft).

Microsoft measures the partners/countries based on the number of certified personnel. One large partner suggested that they are not interested in certifying their employees because once they do, their employees are worth more in the market. They claimed that once employees become certified they become more difficult to retain. As a result, they resist certifying their people and only do the minimum required by Microsoft. Microsoft would like to say “we have 2,000 people certified in Dynamics in Spain” but it is very difficult to achieve because of this disincentive. However, it should be said that the information gathered in this initial stage of research is anecdotal in nature, and further research is recommended in order to assess the impact of the certification process.

#### 8.10 Localization

Localization affects three main areas: translation, legal requirements, and local business practices. There are many differences between countries, including: different criteria of boundaries, differences between the amount of new regulations and their frequency, etc. It is difficult to manage the localizations at the global level, continent level, country level, and even regional level.

MS develops Dynamics in a centralized way, which makes it difficult to comply with the legal and regulatory requirements of the individual countries. Microsoft tries to integrate the local regulations of each country into their software, but there are always areas which are lacking, which need improvement, or which have errors. Therefore, partners tend to fill in the gaps with their own solutions. These partner localizations are different from each other, and not necessarily compatible. However, there is no system in place for sharing these solutions between partners on a national, or even regional, level. As a result, most partners have the standard version of Dynamics and their own “standard plus” version. This becomes a point of differentiation, where partners may claim that their standard plus is better than the others.

#### 8.11 Partner Monitoring

One promising initiative is Productivity Centers (e.g. Centro de Productividad in Manresa). These focus on all Microsoft products including Dynamics, and offer



benchmarks to customers and partners. The Microsoft Productivity Center helps partners to improve communication levels, trains partners, assists with project implementation, and provides sales training. The main objective is to demonstrate how partners can integrate various technologies in order to increase customer value. The Productivity Center in Manresa is leading an initiative to measure ROI on projects, and also benchmarks projects in different countries.

However, currently there does not appear to be much in the way of quality evaluation of implementation projects. According to the partners interviewed, there is tremendous pressure to sell licenses, but little focus on the results of the implementation such as schedule, budget, whether the customer achieves the planned benefits, and overall customer satisfaction. There appears to be a disconnect here that would benefit from further research: while Microsoft insists that they are measuring quality and checking customer references, the partners insist that the focus is on quantity not quality, and on short-term rather than long-term results. This is a key area to investigate, since unsatisfied customers can hurt the channel in the long run.

#### 8.12 Methodology (Sure Step)

Microsoft is very active in developing the Sure Step implementation tool. Microsoft sees Sure Step as an important way to control quality in the market. SureStep could also be a useful tool to help with scope management, a key factor in reducing TCO. However, most partners are currently using their own methodologies, many of which are based on tools from Navision which the partners have continued to modify and develop on their own. At the time of this research, the methodologies that Microsoft is rolling out are in version 1.0 and will need significant modification. Nevertheless, a single methodology for all partners and clients seems to appeal to partners in general. Microsoft is expected to release the next version in the very near future, and is considering making the use of Sure Step mandatory as part of the partner certification process.

### 8.13 Product Updates (roadmap)

The main issue with product updates is that there is a lack of a roadmap for Dynamics, which would keep partners informed as to upcoming changes in future versions. Partners are responsible for keeping their vertical solutions compatible with the latest version of Dynamics, but not knowing where the product is going makes this more difficult and expensive.

### 8.14 Partner Levels

Microsoft has an internal classification of partners in three categories based on revenues:

Top, Core and Emerging. Top partners may be national or international, while Core and Emerging are usually national. Top and Core partners are assigned a dedicated partner account manager (PAM), while Emerging partners may access the services of Partner Activation Centers in order to develop their businesses. There are public partner levels as well: Registered, Certified and Gold Certified. However, this is not an area which the partners emphasized in the interviews, and therefore additional research would be required to analyze the effectiveness of this classification scheme.

### 8.15 Sales Support from Microsoft

One of the primary impediments to growing the Dynamics channel is that more experienced partners who have the best possibilities for growth often are not as motivated to grow their businesses as quickly as Microsoft would like. They are often more experienced and more cautious, and are satisfied with having a stable, profitable business. On the other hand, new partners are more driven to grow since below a certain level of activity, their business is not profitable. However, the latter category of partners requires more resources and support due to their lack of experience and financial resources. To help the larger and more experienced partners to grow, they need help with recruiting and training employees and with marketing. An international partner also expressed a need for greater “financial flexibility”, which they defined as extending more generous terms to fast-growing partners in order to help them with

short-term cash flow issues. The smaller partners are supported by the Partner Activation Centers, but we were unable to confirm the effectiveness of this model during this initial research phase.

The consensus from partners is that Microsoft focuses very much on the short-term. While medium- to large-size partners are assigned a partner account manager (PAM), these individuals tend to be very focused on short-term license sales and not on helping the partners to grow their businesses profitably. The function of the PAM is important as an aggregator of information, but there is a need for a more strategic partner advisor who would be able to make recommendations to partners on how to grow their business, what to change, provide special assistance, etc.

#### 8.16 Marketing and Branding

While this was not an important focus area for the partner interviews, it was mentioned that the Microsoft brand is strong and there is generally a strong recognition of the consolidated position of Microsoft in the market. Microsoft engages in various types of co-marketing campaigns with partners where the cost is shared between Microsoft and one or more partners. They also conduct campaigns to focus on certain vertical markets. However, the general consensus is that these initiatives are mostly tactical in nature, and that there is a need for a more integrated, strategic marketing program in Europe in general and in Spain in particular.

#### 8.17 Technical Support and Maintenance

Technical support and maintenance is another area which needs further investigation, but the initial comments were that Microsoft charges partners for support, but adds limited value. The partner is responsible for supporting the customer directly, and this can often be costly to manage.

#### 8.18 Tools (e.g. PartnerSource)

The PartnerSource portal is an extranet where partners manage all of the information related to their relationship with Microsoft including the status of their certifications, technical support (by partner level – registered, certified, gold certified), revenues,

add-ons, etc. Most partners claimed that while Partner Source contains all the necessary information it is very difficult to find the information that you need. It is also difficult to find partner's solutions. Finally, the Microsoft web site is not viewed as a source for new customers, because it is very difficult to identify a partner with the solution that the customer wants. New customers usually come from the partner's sites.

#### 8.19 Training of Customers

This is an area which could potentially have a high impact on customer satisfaction, since it was revealed by Microsoft that only about 5% of the Dynamics licenses sold are in use, which could be caused by part by an insufficient level of user training. However, this was not a significant area of focus in the initial study, and would require further research.

## 9 ANALYSIS AND SELECT QUOTES FROM 3GERP INTERVIEWS IN SPAIN

### 9.1 Abstract:

Important quote from Microsoft: "At the end of the day however, it all comes back to Microsoft, because it is MS software". However, a tremendous amount of autonomy is given to partners and external service providers (training, recruiting, partner activation) in terms of how they customize the software and run their business. Meanwhile, there is very limited quality control and monitoring by Microsoft, whether in terms of software development, implementations, or technical support. In addition, there is very little Microsoft involvement in the relationships between partners. Microsoft's monitoring efforts are primarily focused on the number of licenses sold. This is a very risky strategy since, as mentioned above, at the end of the day it all comes back to Microsoft. The general consensus is that Microsoft is very focused on generating license sales in the short-term, but does not get involved in helping partners craft strategies for long-term growth and development of their businesses. Verticals are an important area for potentially reducing TCO, but Microsoft currently does not manage this area very well – there is very little structure around how add-ons

are created, maintained, and shared between partners. Microsoft sees SureStep as an important way to control quality in the market, but it is a very new methodology, and has not yet been widely adopted by the partners. Most of the larger partners have developed and are using their own methodology. SureStep could also be a useful tool to help with scope management, a key factor in reducing TCO.

## 9.2 Interviews Included:

	Name	Company/Position	Purpose	Date	Int.	Analysis
1	Eva Sachse	Senior Product Manager, Channel Development.	Obtain overview of MS verticals certification program. Identify strengths and weaknesses as well as barriers to use by partners.	02/01/2008	JW	JW
2	Sven Mortensen	Sven is responsible for the "Surestep" implementation tool developed by MS for their partners.	Gain insight into Surestep methodology. Identify strengths/weaknesses as well as factors influencing adoption and use by partners.	02/01/2008	JW	JW
3	Joan Vinas	Manager of Partner Business Development, Microsoft Spain	Microsoft	9/27/07	PF & JLC	PF
4	Octavi Busquets Balsells, Ferran Cabanes Conesa	General Director and Sales Director of IRIS (large MS imp. part)	Partner Interview	10/16/07	PF & JLC	PF
5	Eugeni Rodríguez	AFIRMA	Partner Interview	12/10/2007	PF & JLC	JW
6	Antoni Mateu y Carles Moles	Marjinsa	Partner Interview	12/19/07	PF & JLC	JW
7	Frederic Barberà	Olivia Systems	Partner Interview	12/27/07	PF & JLC	JLC
8	Tomas Navarro Casbas	Manager of Regional Requirements & Global Development Localization	Microsoft	01/10/2008	PF & JLC	JLC
9	Miguel Ángel Ortuño	IBDos	Partner Interview	01/10/2008	PF & JLC	PF
10	José María Sánchez	Qurius	Partner Interview	1/14/08	PF & JLC	JLC
11	Carlos Buil	IFR, Lleida Training Center	Microsoft	1/29/08	PF & JLC	PF

12	Albert Esplugues	Manresa Productivity Center	Microsoft	1/29/08	PF & JLC	JLC
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### 9.3 Fee Structure

#### 9.3.1 Fee Structure - General

Margins are higher than they were under NAV, and Microsoft uses this as an excuse when you ask for additional assistance – the response is that it’s already factored into the margins. The problem is, due to competition, you start out with a 20% or 30% discount.

What we recommend is that partners pay diagnostic upfront – but customers resist. One solution is a hybrid, where we say we do the high level diagnostics is included in prices. If we need to go to details, that is payable. The same is true for an infrastructure analysis. Another problem is that there are often more than one partner involved in the diagnostic phase. So it is hard to force payment in that type of competition.

Price increases are dramatic and the partners have no say in the matter. For example, the maintenance fee has just increased from 10%-16%.

The objective of reducing TCO is clear, but this will be difficult to achieve without reducing

partner income compared to what they are earning under the current business model.

Income from Dynamics is less than under Classic products, but the criteria to assign resources are the same as for Classics.

Partners need to make up for inefficiencies in the products, which is difficult to do with the current margins.

There are fewer CRM projects than ERP projects, so the cost of managing these projects is greater than for an ERP project.

Revenue is shared between Microsoft and the partners in the following areas: software licenses, maintenance, and technical support.

Microsoft: Well we do provide a legal addendum that they can use, but we do not police the contracts between partners - other partners, and customers. They also determine the prices. They tell us the price and we put it in the system. We have to believe that our partners understand the local market conditions best. It would be impossible for MS to determine these conditions better than them.

#### *9.3.2 Fee Structure - Software License Pricing:*

For licenses, partners pay Microsoft and bill the customer directly, receiving a margin between 35% and 50%.

Licenses are generally charged on a per-user basis on a sliding scale based on volume. Licenses may be covered under a VPO (volume purchase order), or multi-site agreement.

#### *9.3.3 Fee Structure - Maintenance Fee Pricing:*

The standard maintenance fee is 16% of the license fee. The partners receive a margin of 25% on the maintenance fee. Partners can charge more than 16% if they offer additional value-added services.

Discounts are applied to the license fee paid from the partner to Microsoft, before adding the partner's profit margin to arrive at the final cost to the customer. In other words, the partner's profit margin is applied to the net license fee after discounts. Partners are responsible for supporting customers directly.

Licenses are paid once (per user). Upgrades and maintenance is paid yearly. This is a standard pricing model. If the partner goes out of business, then the customer only pays maintenance fees to MS.

Partners also receive tables and objects "for free" in return for paying Microsoft a portion of the sales price.

### 9.3.3.1 Fee Structure - Add-on Pricing

There's no general price established for add-ons. There should be a policy that takes into account the total cost to the customer – including the core application plus add-ons.

In addition, there is no established model for sharing revenue between Microsoft and the partner who creates the add-on, nor between partners. Price has to be negotiated in each instance and in each new country when a partner wants to use a particular add-on.

The add-ons are charged per user. The problem is that under the current scheme, the price is designed to include the full functionality of NAV. For many of the products, the customers do not need the full functionality of NAV.

There is a similar problem for maintenance and support, which is charged as a percentage of the total price of the NAV and add-on package.

## 9.4 Recruiting

### 9.4.1 *Recruiting - General*

Recruiting and training are two topics which are closely related. If there were more trained consultants in the market, recruiting would be less of a problem. Also, once an employee is recruited, the general lack of training in the market means that it may take over six months for this employee to be fully trained and productive, and therefore billable to clients.

MS is trying to increase the ERP market 25% every year but there is a lack of consultants, this situation increases the inflation of salaries and also can produce projects with problems. Also, the market is rapidly growing so the need of consultants is higher than in a stable market.

As a result, there is a lack of qualified resources, causing an increase in salaries that becomes an impediment to growth. What Microsoft needs to do is inject more qualified people into the market through training. Navision understood this well, and opened up their calendar of courses to both their partners as well as those distributing to their partners. However, Microsoft's policy has always been to outsource training,



letting anyone manage it, which means that they end up not being responsible for anything. The problem is in the end it becomes Microsoft's problem directly.

Partners need contract 50% of their workers to support the growth of the market, people who are not as efficient as they should be, and also to cover worker attrition. Several partners also hire consultants with experience with other competitors solutions (SAP, BAAN, ...)

It takes over 6 months from the time a worker is hired until they are fully trained and productive, and therefore billable.

#### *9.4.2 Recruiting - Microsoft Support*

Microsoft also invests to help partners recruit qualified employees, working with various regional governments. For example, Microsoft has started a "Plan Emplea" in Spain to train more resources, focusing primarily on universities and a series of courses. However, they haven't yet arrived to the next logical step of creating a well-funded Resource Training University. This would allow the partners to achieve lower salaries, which is what's really hurting them. Because they still haven't yet reached the level that they had under Navision.

#### *9.4.3 Recruiting – Type of Resource*

In discussing recruiting (and training) you need to differentiate between technical people and consultants. Technical training can be given fairly easily, while finding and training consultants is more complicated. Some Swedes came to visit us and told us that in Sweden they don't try to hire consultants experienced in a tool similar to Navision. Instead, they look for Business Experts, with experience in pharmaceuticals for example, then they train them in the technology. In the end, when it comes to consulting, their experience is more valuable.

### 9.5 Training of Consultants

#### *9.5.1 External Training Centers*

Training is handled by external centers, certified by Microsoft, which are managed by third parties, but many feel that this should be handled internally by Microsoft employees with extensive field experience. The main problems with this external

training model is that it creates a conflict of interest for these “training centers”, who also provide other Dynamics services such as programming support for other partners, creation and implementation of add-ons, and Dynamics implementations. Previously, training was done (and paid for) by Navision, and the partners hired these professionals. Now, training is done by external partners, who are often competitors of the partners who need trained people, and who charge a lot since this is a significant revenue stream for them. So, not only do the partners need to find people in a separate process, they often train them internally rather than the alternative of paying their competitors a lot of money for training their employees, with the added risk losing their employees to said competitor.

The external training model works well for “classic” products, but does not seem to work as well for more complex products like Dynamics. Perhaps the model needs to be redefined to take into account the complexity of Dynamics, combining technical product knowledge with field implementation experience. Oracle, for example, uses their consulting resources to train channel partners.

IFR is one of the external training partners. IFR has initiatives to train the students at the University of Lleida in Axapta. Microsoft recruited one or two students to train at their development center in Denmark for a year. They went through a selection process, but in the end no one ended up going. But there have been very few courses – one course during the year and one in the summer. The courses are focused on programming, not implementation.

IFR also does implementations, primarily of AX. They also do programming for other Microsoft partners, but claim that they have a lot of difficulty recruiting people. They maintain a “Software Factory”, developing solutions using AXAPTA, 50% for their own implementations, and 50% for external Dynamics partners. They also develop their own Vertical solutions.

The goal of IFR is to train students, hopefully one or two go to Denmark for extra training, and then to hire them to work in IFR.

IBDos: Under NAV the training was done internally, and each year I would say “I need 10 people, or I need 20”, and they’d send them to me. It’s only recently that Microsoft has changed this to an external model, where existing partners add Training to the

services they offer. However, the partners doing the training are my competitors, and if I send my people there... In addition, the training ends up being very expensive. This isn't like what we used to have, where Navision or Microsoft said "I'm going to train 50 people this year, how many do you need?" and they would give me 10 or 15 without my having to pay. This was a very neutral system because Navision was doing the training. What you can't do is let a partner earn money providing training services.

For example, there's a company called Hability which does the training. Originally, they were going to find people and train them, and then if you wanted this person you paid for them. However, now you need to find a person and send them there for training when you're not sure yet if this person is worth the investment. You pay high fees for the training, and it's only later that you see if this person was worth the investment. I prefer to train the people myself, and maybe they'll work out for me or not. But it will always be cheaper for me to train my own people than to send them to someone who earns money doing the training.

#### *9.5.2 Training – Type of Resource*

The training programs primarily address technical skills, but there is a lack of training focused on "business" skills. It's very difficult to find well-trained technicians.

IBDos: In discussing recruiting (and training) you need to differentiate between technical people and consultants. Technical training can be given fairly easily, while finding and training consultants is more complicated. Some Swedes came to visit us and told us that in Sweden they don't try to hire consultants experienced in a tool similar to Navision. Instead, they look for Business Experts, with experience in pharmaceuticals for example, then they train them in the technology. In the end, when it comes to consulting, their experience is more valuable.

#### *9.5.3 Training – Microsoft Support*

Microsoft has made investments in local university programs, but they are more focused on developing consultants rather than technicians. For much of the work, university training isn't necessary. IRIS prefers well-trained technicians. These are less expensive and more effective.

There is a general lack of actions to train new consultants and programmers by MS. They need to improve the business focus.

## 9.6 Vertical Solutions and Add-ons

### 9.6.1 Add-ons - General

Partners can create what are called “add-ons”, or custom solutions for a particular vertical. The partner who creates the add-on is the owner of the solution.

These add-ons are first registered by Microsoft once they have been implemented with a minimum of 10 customers and have passed Microsoft’s quality control. Once registered, add-ons must meet certain requirements to become certified by Microsoft. All work required to develop the add-on, and to get it registered and certified is paid for by the partner.

Once an add-on is registered and certified, the partner negotiates a revenue-sharing agreement for further installations of the add-on. Normally, the partner receives between 60 and 80 percent of the revenue, and Microsoft receives the remainder.

Add-ons are shared with other partners, locally and internationally, and the fee distribution is negotiated individually with each partner.

The investment needed is too high compared to the eventual benefit since the partner absorbs all costs related to development, registration, certification, and compatibility with new version of Dynamics.

The problem is that the small to midsize partners who regional or national neither have the size to dedicate programmers to developing vertical solutions, nor do they have enough implementations to amortize the cost of developing the solutions.

The problem right now is lack of volume of demand for the verticals (add-ons), because each one is so specific.

Since add-ons include any kind of additional functionality for Dynamics, they can include anything from a small localization application, to a horizontal application like taxation, to a full-blown industry vertical. The problem is the terms “add-on” and “vertical” are used almost synonymously.

### *9.6.2 Add-ons - Number of Verticals*

Microsoft has decided to allow as many verticals in the market as the partners wish to create. So, there can be 200 construction verticals. And none of these verticals have any particular seal of quality to say that this is the definitive, recommended construction vertical. This is Microsoft's philosophy, and, as a result, they don't make any investment, or they don't have to make an investment. They can't say "since you're investing in developing verticals, I'll give you financial assistance", because they'd have to do the same for everyone.

The concept of "vertical" is poorly defined in Dynamics, and not well-understood by partners. There really should be 4 or 5 broad verticals in Catalonia, but instead there are about 300. The add-ons are too narrowly defined, and therefore aren't true verticals.

The situation where each partner creates their own verticals is a way for them to differentiate one from another, but in the end there are many versions of a particular vertical for a client to choose from, and in the end the client ends up paying for the costs of development. Having Microsoft putting their seal of approval on a handful of partner solutions in each vertical segment would result in lower TCO for the client and greater standardization, but it would mean less differentiation for each partner. Microsoft would also have to compensate the partners for their versions of the verticals. So, while it would mean lower fees for the partners, it would also mean lower investment in product development.

Microsoft does not directly certify the vertical solutions – they allow partners to create add-ons. Microsoft doesn't manage this process, or help the partners to develop the verticals.

### *9.6.3 Add-ons - Certification*

The certification program is based on all solutions for MS Dynamics. Currently there are tests for AX, NAV, GP. Coming soon are SL and CRM. We are also working with the mobile team and the entrepreneur team. We have 16 solutions currently certified. This is not many, but we began the program in July 2007, and it does take some time to have the partners certify the solutions.

Certification consists of 5 criteria:

1. Solution test
2. 10 customer references
3. Solution profiled in solution finder system
4. Service plan with MS (access to training material/source code)
5. Must be on highest level of partner plan (gold certified)

Getting to Gold status is difficult, but by completing the other requirements, you help yourself on the way. Hence, obtaining solution certification reinforces achieving Gold status.

The customers tell us that the solution test and the customer references are the 2 most difficult criteria. The solution is completed by 3<sup>rd</sup> party company Veritest. Testing process emphasizes 25 different components. It is primarily a compatibility test – that it is compatible and functions with the Dynamics solutions. That it also uses similar developments, that the user interface is similar, etc. The way we test business functionality is the 10 customer references; a market validation (I am willing to recommend solution to other customers). The solution needs to be running on the latest or second latest version of the software.

Competitors have similar testing requirements, but few have the issue of customer references and certification. The partners like it because it is a manner in which they can differentiate themselves. They receive a ranking in the Dynamics solution finder. They also come into the MS Dynamics Solution catalogue. In the future we will only have marketing resources for certified solutions. We believe that the partners gain an ROI of 10 if they go through this certification process. This is most relevant for larger international partners that can leverage sales across a larger market.

However, the certification does not necessarily only for large partners. It is for existing solutions that have been there for 2-3 years. Our target is 500 solutions by end of 2008. (1 solution sold in 10 countries is 10 solutions). So 80-100 solutions. Testing process takes 3-4 weeks. Veritest is world-wide.

The partner owns the solution. So officially MS does not have an official commitment to the customer. However, it always comes back to MS anyway. We make the test difficult on purpose. We had an easier test before, and hence had very limited value. It is the partner's responsibility to explain who owns what. The partner will always have

access to the source code. It could be an issue that partners can disappear, but this is one goal of the certification process – to prove longevity of the partner. We cannot police everything that they do. There are no requirements for training for partners.

You cannot test for the business functionality of the product. It is totally impossible. This is why we require the 10 customer references – let the market speak. Veritist asks for 5 scenarios when they do scripted testing of the product.

There is another program called MDIS (Microsoft Dynamics Industry Solutions) which are exclusively for AX. This is really more of an OEM program. Their solutions are on the MS pricelist and MS has support responsibility. MS owns responsibility and support obligations. This is a new program. These solutions are not certified. The producers of these products are invited; it is not open for many. It is a very select group - and the testing validation is far more rigorous. We look at their financial data, etc.

For the regular certification program we have 30-40 involved in testing and 30-40 in certification process. But we have a mid-April cutoff to get into the catalogue.

IBDos comment: For years IBDos didn't believe in certifying verticals because without certification, they were dependent on the implementer for changes and upgrades. However, certification protects the code and only Microsoft has the key. So in the end the certification protects the partner who developed the vertical. But it benefits the partner more than the customer.

Partner comment: Add-ons can be certified as "Dynamics Compliant" by a 3<sup>rd</sup> party by paying a large amount of money (14.000) and by complying with some basic standards. There is a discount for finishing the certification in an absurdly short period of time. If they agree to the add-on, there are given certain development object for free. However, if a customer changes partners, there are no clear rules for how MS should handle the situation.

#### *9.6.4 Add-Ons – Microsoft Support*

There is no support for selling Add-ons through partners, there isn't a model to help partners to sell or buy add-ons from other partners.

There is a clear necessity to establish a process to validate Vertical Solutions and Add-ons by MS, something like a quality certificate to put order between the vertical solutions and add-ons that are now in the market.

There is a necessity to establish a clear classification over the Vertical Solutions and Add-ons based on how these solutions use NAV.

There is a lack of price politics with Vertical Solutions and Add-ons.

There is a lack of actions to show potential customers what the vertical solutions are.

There is a risk in technological changes to adapt Vertical Solutions and Add-ons and partners need to mitigate.

Partners have to develop Vertical Solutions and Add-ons over the different products.

Since it the evolution of products is not clear, partners invest in solutions with no future or with a lot of competition, and they are competing in the same accounts with similar solutions.

For the large partners, there is significant marketing support for vertical solutions.

When a customer asks for a vertical solution, Microsoft just shows the catalog – they don't make any effort to rate, or to assess the quality, pricing, etc. of one vertical vs. another.

## 9.7 Relationship Between Partners

### 9.7.1 *Relationship Between Partners – General*

There is more competition than collaboration, and this is encouraged by MS. For example, some ex-employees of one partner consulted opened their own new business, and MS helped them with this.

One partner was recently audited by MS. 3 people came and looked at their operations for the last 3 years. They were told that they were being audited, but nothing was found. They were given very little information about the audit, and learned little from it. They also did not know if they were the only ones being audited.

Where collaboration between partners can work is in situations where you need special expertise for a particular project, and you create a joint venture with another specialized partner. However, the large partners don't have any incentive to help a small partner grow. Microsoft has helped Afirma create programs to help smaller



partners, but other than that there's a lack of guidelines to help structure relationships between partners.

#### *9.7.2 Relationship Between Partners – Microsoft Support*

“If you ask a partner who their biggest competitor is, they'll say ‘another partner’”. The implication is that there is more competition between partners offering Microsoft Dynamics than with competitors offering other software packages, like SAP or Oracle. MS needs to create some basic rules for collaboration between partners. Currently they do not get involved at all. Navision used to do this in a much better way; they actively helped partners to connect and thereafter moderated disputes. MS does not do this. Under Navision, everyone understood the rules of conduct.

There are too many Dynamics partners in Spain competing for too few clients: “If there are 3 Dynamics partners competing for the same work, Microsoft always wins.”

Microsoft should place a limit on the number of partners.

Microsoft organization in Spain has very little to offer their partners. They do not manage the 200 partners in the channel at all. They propose many new initiatives to MS. MS thereafter studies the problem and then finds reasons not to push the initiative forward.

Under Navision, the partner relationships were established in international meetings. Instead of there are national meetings it seems that is not enough because partners don't share a significantly number of experiences and solutions.

There is a problem with the access to the code developed by old partners because new ones can take advantage over the work done by old ones, so this affects the relationships. Maybe there should be a system to compensate the old ones.

It seems that partners collaborate because they want to ; MS is not helping them to establish the relationship.

When there is a problem with an end customer and one partner there is a lack of procedure on how to solve it.

Sometimes there are problems with the project, but sometimes there are difficulties with the customer, but there is a lack of processes to share it.

There are problems with the access to the code when a customer decided to change partners, in case that there is a vertical in the project is the worst situation.

#### *9.7.3 Relationship Between Partners - Add-ons*

The Partner Development Centers help moderate when there is a conflict between the developer of a vertical and other partners who want to use the vertical solution. If the conflict cannot be resolved, they either bring in a vertical from outside, or they develop the vertical solution themselves.

IBDos claims that they make agreements with other partners who are interested in their vertical solutions, but that IBDos does the installation themselves. We don't let others install our products because we can't trust that they'll maintain the same level of quality. We only allow certain partners in other countries, with whom we have a relationship of trust, install our add-ons.

If I'm a small partner, I would like for a larger partner to offer me a vertical that I can sell because I don't have the resources to make the investment in developing a vertical - I'm small, a generalist, and I don't have that much to offer. As a large partner, however, you've made the investment in developing the vertical yourself and don't have any intention or incentive to give away your products.

#### *9.7.4 Relationship Between Partners – International*

On an international level, there are more incentives for partners to work together. AX has an organization called AXPACT and NAV has an organization called Partner Power. AXPACT is an association of international partners, who contact each other for international projects, and each partner performs its part of the project. Partner Power is more organized – there is a lead country who brings the project to the group and is incentivized to implement it. And you get a percentage of each of the projects in the various countries. This is the structure that works best – you're incentivized to do the implementation because you want to be the lead partner. Those partners who just do their piece of the project and don't have to make the marketing or sales investment receive smaller margins because their costs are lower.

## 9.8 Certification of Partners

### 9.8.1 Certification of Partners - General

Microsoft - We have considered in the next round of partner certification we require that they are using Sure Step. But we do not have a clear idea what “using it” means. Controlling “use” of Sure Step is difficult. We could say that a requirement for certification if there are some escalation cases, we could ask for Sure Step. Well yes – they could “offer” it, which is not the same as using.

There are no barriers to becoming a Microsoft partner if you comply with their certification requirements. For example, they do not limit the total number of partners in the channel due to anti-trust regulations.

In order to represent Microsoft Dynamics products, partners must have certain certifications in various areas (technological, functional, by product, etc.), which are handled through training centers run by third parties (which are certified by Microsoft).

There are also different levels of certification: Registered, Certified and Gold Certified.

They have a system for assigning “points” according to the activity of the partner.

There are two types of certification: certification of partner companies, and certification of personnel.

Microsoft measures the partners/countries based on the number of certified personnel. IBDOs, for one, doesn't want to certify their people because once they do, their employees are worth more in the market. You make the investment in training your people but once they become certified they become more difficult to retain. So they resist certifying their people and only do the minimum that's required by Microsoft. Microsoft wants to say “we have 2,000 people certified in Dynamics in Spain” but it's very difficult to achieve.

The former partners of Navision were accustomed to a lower number of total partners, so their relationships with Navision were closer, and also they used to compete less with other Navision partners.

Maybe the relationships with Navision were less regulated but they had more flexibility to solve the problems.

Partners need to operate in a global focus, and they need the MS support.

## 9.9 Localization

### 9.9.1 Localization – General

Localization affects three main areas: translation, legal requirements, and local business practices.

There are a lot of differences between countries, for example: different criteria of boundaries, differences between the number and the time to present new laws, etc. It's not easy to manage the localizations at the global level, continent level, country level.

MS develops Dynamics in a centralized way, which makes it difficult to comply with the legal and regulatory requirements of the individual countries. So partners fill-in own gaps with own solutions such as sales and payroll taxes and L.O.P.D. (Ley Organica de Proteccion de Datos – regulates how personal information is handled.) However, there is no system for sharing these solutions on a national level.

Microsoft tries to integrate the local regulations of each country into their software, but there are always areas which are lacking, which need improvement, or which have errors. And each partner makes their own changes, but there's no incentive to share this with other partners or even with Microsoft. All of the localizations created by the individual partners are different and not necessarily compatible. So all of the partners have the standard version of NAV and their own "standard plus" version. This becomes a point of differentiation, where partners claim that their standard plus is better than the others.

There are differences in partner participation in localizations over the countries. In one cases they take part in the decision; this is the case of Partners Network, and not in the other cases.

When MS brought Navision there were differences between the localizations from distinct countries. They have made an effort to standardize the "country solutions", and partners don't realize about it if they don't work in international projects.

We didn't have access to localization statistics because he (Tomas Navarro, Microsoft) told us that they are confidential. In our opinion localizations statistics are important to show how localizations are adapting the solutions to countries and markets.

### *9.9.2 Localization – Microsoft Support*

There is a difficulty in establish what MS considers a “localization” and also to establish priorities between the localizations. It seems that there is a lack of communication with partners because there isn’t a localizations roadmap, or if there will be partners don’t know anything about it.

It’s difficult to differentiate what is a “personalization” and what is a “business practice” there is a conflict between the final customer and the partner.

Partners need to know in what localizations MS is working and also when is to be supposed to be delivered.

There is a lot of bureaucracy to manage localizations with partners.

### *9.9.3 Localization – Add-ons*

Localization of the add-ons is really a big challenge. Localization across countries is difficult. You cannot underestimate the translation of the marketing and documentation material either. From the beginning when you design any vertical solution you have to decide if it is going to be local or international.

### *9.9.4 Localization – Collaboration Between Partners*

In EEUU partners share code between themselves and also with MS, not in Europe. The European laws don’t help MS and partners to share code.

## 9.10 Activation of Partners

### *9.10.1 Activation of Partners - General*

It’s difficult for partners to run a profitable business until they reach a certain size – they become profitable when they have at least 15 people. Therefore, it’s very difficult for new partners to get started. In many cases the partners aren’t very large, and usually only understand the technical aspects of the vertical, and not necessarily the business issues.

Partner Development Centers exist who have the function of activating partners. In each training area, the partner comes in for a day and leaves with a business plan. They also do specific workshops. They help partners on a practical level by participating in the sales process, to help close a deal for example. They also help on a

practical level with implementations. However, they only sell services to partners, not to end clients. The client sees them as part of the partner's team. They are evaluated by Microsoft based on a comparison of partner sales before and after training.

It's difficult to find qualified PDC's in other countries because it's not a very profitable business.

Success outside of Spain will depend on how well Microsoft chooses PDC's; the PDC's need to be skilled in evaluating where the partner needs help, as well as having practical skills like helping a partner close a sale.

In the Spanish market, Microsoft has developed an initiative where emerging partners are supported through Partner Activation Centers (centros de activación de partners) which are external but which maintain a close relationship with Microsoft. This project is called Afirma.

MS does have consultants working with partners – largely within AX and CRM. They do this to bring in MS specific knowledge. Many customers ask to deal with MS explicitly. The MS consultants offer additional expertise and knowledge of enterprise platforms and infrastructure products (with a handful of AX consultants). They are mostly in the USA, but there are others in Munich (about 100 altogether). There are more GP consultants in the USA.

This is another area, similar to training and recruiting, where Microsoft has allowed external parties to provide the service. However, like those other areas, there is a potential conflict of interest here, since these companies who are given the label "Partner Activation Center" are also certified Dynamics partners who provide other services, including development of verticals and Dynamics. So in the end, they are in competition with the new partners on some level.

#### 9.11 Partner Monitoring

There is no quality evaluation of implementation projects. There is a pressure on selling but not in the results of the implementation.

The experienced partners who began their businesses 20 years ago and have general directors who are a bit older tend to react badly to the extreme pressure from Microsoft to grow. The general consensus is that Microsoft is too focused on selling licenses and not on the final client solution.

Productivity Centers (e.g. Centro de Productividad in Manresa). These focus on all Microsoft products including Dynamics, and offer benchmarks to customers and partners. The MS Productivity Center is helping partners in the increase of the speech level, training partners, helping partners in projects, and sales training. The main objective is showing how they can integrate different technologies to increase the final value.

MS Productivity Center is leading an initiative to measure ROI in projects, and also benchmarking different projects in different countries.

Microsoft does extensive, random customer surveys

In the Spanish market (perhaps in other countries as well) there is a person dedicated to verifying customer references as well as testing project quality.

Microsoft does not specifically keep track of partner performance such as variance analysis on project hours estimated vs. actual, budgeted cost vs. actual, etc.

Microsoft is too focused on sales of licenses. Every month there is tremendous pressure from Microsoft for the partners to report results.

The emphasis is on quantity not quality, and on short-term not long-term results.

Most partners are losing money due to this excessive pressure and short-term focus.

Microsoft: User acceptance tests can be done in a simple, generic fashion to a certain level: Have you trained key users? Have you migrated certain amounts of customer data? Have business processes been included in process scope? Are key processes tested (order entry, etc).

In the event that the current partnership disbands, MS will go in and try and find another partner for them. In theory there should be a procedure for what should happen if their implementation partners go out of business. The ultimate insurance that the customer has is that he has access to the source code, so you can always find someone to work on the system.

It seems that there are a lot of distance between MS and Partners. Partners don't clear know what the role of the subsidiary (MS in the country) is.

The newest partners depend on Afirma (MS outsourcing) as a Activation Partners Center, not directly to MS.

Microsoft: With Sure Step we have taken the first step in controlling quality in the ecosystem.

Microsoft: There are a number of quality control challenges in the MS ecosystem. There are many small partners. We do not really know about how many implementations have gone well, and not well.

## 9.12 Method (Sure Step)

### 9.12.1 Method (Sure Step) – Adoption

Partners use methodologies provided by Microsoft when it makes sense. They use what they need and ignore what they don't. Their technicians develop their own tools to fill in the gaps of what is lacking from Microsoft.

Most consultants are using their own methodology, and the methodologies that Microsoft is rolling out are in version 1.0 and will need a lot of modification. IBDos, for example, started with the On Target methodology from Navision, but have been modifying and evolving the methodology to suit their needs. A single methodology for all partners and clients would be welcome, though.

Partner: One methodology that we always do is a prior diagnostic. They charge the customer between 8,000 and 24,000 euros for this (about 15% of project cost).

Partners are not aware of MS methodologies.

Partners think it is difficult to use completely a methodology, because there are differences between countries, markets, customers, specialization, etcetera that can affect the methodology implementation.

Former NAV partners are using the old NAV methodology, the pre-analysis is the most used.

It seems in partner's opinion that Sure Step is developed for projects with a low level of customization.

Microsoft: We now have a software solution test where partners can test their software solutions about certain quality requirements. Currently it is just a recommendation that they use Sure Step, but in the future it will be a requirement. Sure Step released July 1, 2007 version 1. It has been in use for 6 months. Many



partners have selected Sure Step, but there is no real way to measure how many are using them. We can measure downloads. Sure Step team is driving contact with partners to collect cases studies. But we do not have any detailed data. We can only know if the partner has a service plan so he is able to download.

The only statistics we have are who is downloading application. We also talk to partners to get a more qualitative sense of what is going on. There has also been some pull from customers who say “we have heard that MS has this tool”. So many of our larger international partners have changed from their own tool to Sure Step.

What we hear from partners on the positive side is that it is good to have a method – to show to customer. On the negative side, it is still not easy enough to do partner customization. Partners can add their own content (descriptions, template). They would like a search function. The contents of Sure Step were developed by implementation partners. We have talked to over 300 partners in the development process.

If you build up specific tools within the application (NAV) you link them into Sure Step. Hence there is some lock-in there. Our desire is to make it easier to include more product specific attributes to the tool box.

The best of our partners use it – the most profitable and successful ones. We have found that older partners are less likely to adopt and use it. They have been successful for many years without it. Also it is in English, which limits adoption. Germans might be more prone to use it, whereas Spanish ones perhaps not.

MS does not have a clear indication of ROI for the product. We have limited data on the use. We can also look at project escalation rates as some proxy of success of Sure Step. We do have specific statistics on escalation cases. We also have figures on class training for Sure Step use. They have been successful. Across product lines we see more use in AX partners – projects are more complicated.

#### *9.12.2 Method (Sure Step) – Background*

The Sure Step implementation tool is designed to cover all Dynamix applications (AX NAV, GP, etc). But it also has a product specific layer.

An upgrade to Sure Step is due Q1 2008. Version 2 scheduled for July 2008. Differences between V1 and V2. V2 will be translated into 4 main languages: German, French, Spanish and Russian. Feedback will be processed in order to improve Sure Step itself.

MS has defined a sales methodology as a front end to Sure Step. The link between sales and implementation is in Diagnostics. The emphasis in Sure Step is primarily on implementation.

The next step is to identify business processes within the company. Even in small companies the business processes can be complex; more complex than the people believe. In the diagnostic phase there can arise many processes that require greater attention and are not just simple implementations. Then you have project scoping. You have analysis of infrastructure. Can the HW support the system. Then you have the project planning. Then you have the proposal management.

When you look at key deliverables you have preparation, scope planning, analysis of business processes, scope statement, infrastructure assessment, project plan including costs, and risk analysis.

In deployment we have go-live plans, configure test system, end-user training, final user testing and validation. We recommend training key users very early on. This way the key users can be involved in customization questions. You can also follow a traditional waterfall model as well. We recommend that the partner get a sign-off on each phase so expectations are met.

Operation is basically closing the project and transitioning to the owner-operated model. It includes support contract and opportunities for additional business. Project management tasks are important. It is important that each individual phase is started with planning. The disciplines in project management are risk and scope. Issue management, procurement, time and cost, quality management. These are more salient in large enterprise management.

Then we have cross-phase management, which emphasizes inter-dependencies between different phases. We have included many templates in application to support all phases; Deliverables, statement of work, contracts, etc.

There is a clear trade-off between quality control, PM discipline, etc. and speed and agility. So what we have tried to do is embrace this flexibility in the tool – via filters and project profiles. Partners can use the templates more or less as they like. They need to critically look at PM tools. We had a roundtable at Convergence and they all had the same problem – scope control. Customer wants everything for no money, competition is there so partners do not say no – so consequently, you get scope problems. So looking into how to manage scope is one of the biggest challenges of the partners as well as the Sure Step application. Some partners have very limited project management capabilities. In Europe, many partners are doing fixed price, were as in USA many are using time and materials.

What we recommend is that partners pay diagnostic upfront – but customers resist. One solution is a hybrid, where we say we do the high level diagnostics is included in prices. If we need to go to details, that is payable. The same is true for an infrastructure analysis.

Sure Step has phases. It has repeatable processes. Hopefully improving customer experience by bringing best practice. Even rapid implementations require some methodology to maintain consistent quality. In the mid-market it is an absolute must that you have a methodology. As a partner you have to have a methodology. Even the small customers require it. They want good software that is cheap and fast.

We have some phases – from diagnostic to operation. We also want a customer for life cycle. Hence we need some for optimization. Here we can talk about 2 types of optimization: 1) technical such as system and database optimization, and 2) optimization for the implementation of other business modules for future product sales and upgrades.

We can do implementation in several ways: a) rapid implementation, and b) more thorough analysis and planned implementation.

From there we can define certain cross-phases that are processes that permeate the entire implementation process such as business process analysis, data structures.

One of the things that many of our partners are weak in is project management skills. So we have said that project management must be an integrated component. We have also defined a number of roles, where we described specific roles and what is expected

from each, as well as recommended skills. These include consultant roles as well as customer roles.

All of this is embedded in a small application – it is a software application. We have phases: Diagnostic, Analysis, Design, Development, Deployment, Operation. Each phase has tasks and sub-tasks. Each phase has a plan activity. You have pre-conditions, to identify dependencies. Then you have post-conditions and process and deliverables. It is a consistent way to look at all phases.

There are different implementation models. When we talk rapid implementation, we have a diagnostic phase, then go directly to deployment and operation. This means we cancel analysis, design and development. We can do this because we define rapid implementation as having no custom programming of any kind. It is simply a standard implementation. We have simple customizations like forms, invoices, fields, etc. If you have more than 1 add-on solution, then you should be careful. If you have a very high volume of transactions, then you cannot do rapid implementation (you have infrastructure issues). Also if you need 10 years of transactional data, the rapid is out of the question.

What we have done in NAV is to provide them with questionnaires. We have master data structures to help with data migration. We have user set-up tools for permissions. We have implemented best practices.

If we look at diagnostics; here we go from sales to implementation. This is a very important phase. Here you develop project scope and map – often a customer proposal. Also all of the deliverables are defined. You later have to do the transition from the sales team to the implementation team. This is a common source of problems, as you have the sales team promising everything and then the implementation team cannot deliver within the bounds of the agreement.

Implementation can be done in many ways. A full implementation will typically be done by AX – this is the more complex application. It looks like a waterfall, but this can vary – it can also run in parallel. Sometimes diagnostic phases should require additional analysis. Then you can agree that outcome of analysis phases will determine further project definition. Many partners are asking the customer to pay for the

analysis up-front, and if project is accepted money is rolled into rest of implementation.

When looking at complex roll-out scenarios, you need to look at how it could be done. You can also use a hub and spoke scenario with a core system and add-ons as appendages.

When you look at the application you will see the same model. You are able to set some filters. So for example, you define the product (AX, NAV). You can also select the project type (small versus complex). The Sure Step application is very scalable between rapid and full implementation. Consultants do have the opportunity to cherry pick which exact functions they would like. This is going to be emphasized even more in version 2; these filtering functions. We have discussed whether this should be web-based, but there are always connection issues.

Are we generating paper, or are we parameterizing? Well – this is the ideal, but hard to achieve – but something we work for in next version so of the project. There is a risk of over-automation, it can ruin project. We have tried to find this balance in role definition. Sometimes customers do not expect to have to do anything. So it is important to manage expectations – that they have to contribute.

Partners can add their own scripts. We have spreadsheets and product demo scripts. We do not have a cost estimation tool – this might just be too difficult to build. What we do have is integrated with MS Project. We now have many product specific filters (for example, CRM). So you could go out and say we are going to have a NAV CRM. With CRM – the customization level is so high, it is difficult to provide standard implementation.

Within future versions of Sure Step, we can embody specific set-up data and industry specific practice into the tool. In this form we can facilitate business specific knowledge transfer.

### 9.13 Product Updates (roadmap)

The main issue is that there is a lack of a roadmap for Dynamix, which would keep partners informed as to upcoming changes in future versions. Partners are responsible for keeping their vertical solutions compatible with the latest version of Dynamix, but

since they do not know where the product is going, it is difficult and expensive. The partner is also responsible for keeping the vertical consistent with new versions of Dynamics. The partners develop an add-on for a specific version of Dynamics, but when a new version appears, it is difficult and expensive for the partner to make the add-on compatible with the new version.

NAV had new initiatives about marketing, new markets and methodologies. MS does not involve their partners at this level of strategy.

Microsoft: When AX and NAV come with the new release, we need to have a new test specification. So if we want them to use Sure Step, this needs to be in test specification. But we have not fully figured this out.

There is no clear message about how to position Dynamics AX and Dynamics NAV. There was a message about “convergence” but it is not clear for the market, because it does not seem technologically possible.

The current product placement is punishing NAV because NAV is going to the smallest enterprises.

The distance between partners and developers is getting bigger, so partners have difficulties to know what MS is doing, and also where the products are going. It seems that there is a lack of communication.

Partners don't clearly know where products are going, so partners don't know if they are developing the products in the right way, because new versions of NAV or AX can absorb the partner's developments.

There is no clear message about the future of MS's ERP portfolio.

There is an opportunity to develop a workflow for NAV.

Microsoft: The real problem is the customizations that are poorly documented. This is totally disastrous for the upgrade path. In NAV the source code is fairly accessible and Seaside is fairly easy to modify – and this affects the source code. This is the problem. This is part of the appeal of the product – NAV is very easy to customize. You can have instances with 2 different partners with additional add-ons that are poorly documented. Yes, you can just have modifications of the source code to do a simple modification that is not documented. The market driver for NAV is that it so easy to

customize. Customers feel that it is their software. Our partners always tell us the same thing, MS has some problems but the software is great!

At the end of the day however, it all comes back to Microsoft, because it is MS software.

Software factories don't have a clear future, since they depend on other partners to do business. They don't add value to MS because they don't sell licenses.

#### 9.14 Partner Levels

There are 175 partners in Spain, of which 15 are classified as gold certified.

Microsoft internal partner classification (based on sales)

Partners are classified in three categories based on revenues:

Top

Core

Emerging

Top partners may be national or international, while Core and Emerging are usually national.

Top and Core partners are assigned a dedicated partner account manager (PAM).

Microsoft: We are considering requiring higher levels of certification in order to use Sure Step. But as of now everyone can use it. We are considering requiring certification for future versions. The idea would be to establish some basic requirements for knowing how to use it/using it correctly. It is important to stress the differences between the different partners. Some of the larger partners will operate completely differently than the smaller partners. Especially considering the transition from sales to implementation.

PAMs are providing good partner support.

#### 9.15 Sales Support from MS

One of the primary issues has is that more experienced partners who have the best possibilities for growth often don't have as much of a drive to grow, while new partners who are more motivated to grow because below a certain level of activity, the business isn't profitable, need more resources and support. To help the larger and more experienced partners to grow, they need help with human resources, training,

marketing, and more financial flexibility. The smaller partners are helped by the Partner Activation Centers, but it is not clear how successful this model has been.

The focus is very much on the short-term. While medium- to large-size partners are assigned a partner account manager (PAM), these people are very sales-focused and very short-term focused. Their function is important as an aggregator of information, but there's a need for advisors who are more strategic, who can make recommendations to partners on how to grow their business, what to change, provide special assistance, etc.

MS sometimes does telemarketing campaigns, but the results are poor. Moreover, MS does not optimize the position of the verticals in Google.

There is tremendous pressure from MS to generate sales, but MS does not support the partners' sales efforts.

Solutions Specialists: experts in various aspects of ERP who help with the sales process, especially for large sales. A new initiative that IBDos would like to see grow.

The two biggest limitations to growth for the biggest partners are finding qualified people and financing growth. IBDos commented that for them to double in size organically, it would normally take about ten years. However, Microsoft wants them to double in two years. But in order to do so they would need some kind of financial assistance. They don't want a bank, but they would like some flexibility when it comes to paying Microsoft. They have to pay their employees right away, often investing in training them for up to a year before they see a return on their investment, and there's a lag before they are paid by their clients.

Microsoft puts a lot of pressure for sales, and then creditrans comes to collect, and if you're a day late they cut off your configurator. So the partners feel why should they take the risk of growing so fast, when any mis-step could result in Microsoft's stopping their business? So this dichotomy is very negative for the partners. Also, there isn't one voice to deal with – like a Business Advisor type of role. Different people ask for different things, constantly pressuring. There isn't an open forum to discuss the issues you have with your business – if you talk about financial issues it feels embarrassing because they think you're asking for a favor or a loan, or business isn't going well. There's no one to make recommendations on what changes to make in your business



in order to be successful, how other partners achieve profitability with a particular activity, etc.

One idea that Microsoft has is that there's a tendency for partners to grow for a while, and then to level out. So, to keep the business growing, they need to constantly add new partners.

## 9.16 Marketing and Branding

### *9.16.1 Marketing and Branding – Microsoft Support*

Microsoft engages in various types of co-marketing campaigns with partners where the cost is shared between Microsoft and one or more partners.

Microsoft: We do have industry marketing managers, but the effort is not very consistent.

Microsoft conducts campaigns to help promote certain vertical markets.

Microsoft also conducts branding campaigns and awareness campaigns for Microsoft products.

Inner circle – partners suggest customers who may be interviewed for testimonials, and in return the partners are given “points”.

There is a serious marketing problem in Europe. Microsoft is targeting potential Dynamics customers with direct mail promotions, but they need to do general brand building.

IBDos has found themselves creating marketing events where they pull together 100 or 150 potential clients. But these companies, when they arrive at the point of choosing an implementation partner, request 3 bids and IBDos won't necessarily be the partner chosen. So they end up making the marketing investment for the other 2 potential implementation partners, something which they consider unfair. Although lately Microsoft has been trying to help by providing Marketing Funds.

Microsoft's brand is helping partners to sell Dynamics NAV.

The consolidated position of MS is recognized by the market.

Now partners have more opportunities, especially access to big deals.

There are tactical initiatives related to sales but not strategic, maybe due to on sales pressure.

Forum Indeco is an example of a tactical action with poor results; it isn't a strategic action to improve the products.

Marketing events are not clearly defined, because partners have the sensation that they have to pay for events with a not clear return.

The awareness about the MS's portfolio as a complete solution is very well done.

#### 9.17 Tech Support and Maintenance

MS charges partners for support, but they (Microsoft) do not add much value.

As an ISV there is a high level of support when needed.

Sometimes it's difficult to access people with the knowledge needed for solving technical problems.

Partner Advantage is less than the normal support with Navision or Baan.

Sometimes in situations where the level of technical support doesn't cover the partner's needs, the partner spends a lot of resources to solve the problem, affecting their profitability.

There is a technological focus instead of a business focus, but they can forget the integration between different solutions (outlook, Share point, etc.).

It is difficult to find the real experts on a technological problem.

#### 9.18 Tools (e.g. PartnerSource)

The PartnerSource portal is an extranet where partners manage all of their information related to their relationship with Microsoft including the status of their certifications, technical support (by partner level – registered, certified, gold certified), revenues, add-ons, etc.

Partner Source contains all the necessary information but it is very difficult to find the information that you need. It's difficult to find partner's solutions. It seems that Partner source doesn't have a marketing focus.

The MS web site isn't a source for new customers, because it's very difficult to find a partner with the solution that the customer wants. New customers usually come from the partner's sites.

Instead of there are solutions for partners, they didn't realize (for example: workflow for NAV).

Partners find out about new MS initiatives because they attend international meetings or meetings with international partners, not by the subsidiary communications.

There is an initiative called "demo-to-win" to help partners in the presales process.

The Spanish area for Partner Source is not up-to-date.

The Partner Program site is huge, and it's difficult to find information that partners want.

Partners receive very few requests from other partners who found their add-on on the Solution Finder website.

MS on-line web page is very poor. MS methods are designed for generic situations and often do not apply to the specific context they apply to.

#### 9.19 Training of Customers

Microsoft: We have data on the number of user licenses bought versus the number of actual users, and we can see that there are very few people actually using the licenses (5%). One reason could be that the user training is insufficient. So there is something about the adoption rates that tell us that the software is not being utilized 100%. When you have a low adoption rate, there is an increased chance that the customers are unsatisfied with the software and that they will switch to other platforms in the future. It is a proxy that expectations are unfulfilled. Customers see that implementations as expensive and often behind schedule. Sure Step could address the training element.

Microsoft Productivity Center in Manresa is trying to show how technologies can increase productivity. Their focus is on business value not on technology. Their focus is increase the productivity of users, and then users can increase the organization's productivity. MS Productivity Center is training end customers to show how they can increase their own productivity using MS products.

## 9.20 Other issues

### 9.20.1 Background:

Of the major ERP providers in the small and medium enterprise segment, Microsoft is one of the few providers which does not sell direct at all, but rather relies exclusively on channel partners. Oracle (only part of the channel goes through partners; most of the implementations are done by Oracle), SAP, etc. sell direct and through channel partners. For small businesses and local solutions, the market is still being defined. Most of the providers are addressing this market by buying existing companies or solutions to achieve scale in this market. (e.g. Sage, CCS (Spanish market)).

Important quote from Microsoft: At the end of the day however, it all comes back to Microsoft, because it is MS software. However, a tremendous amount of autonomy is given to partners and external service providers (training, recruiting, partner activation) in terms of how they customize the software and run their business. Meanwhile, there is very limited quality control and monitoring by Microsoft, whether in terms of software development, implementations, or technical support. In addition, there is very little Microsoft involvement in the relationships between partners. Microsoft's monitoring efforts are primarily focused on the number of licenses sold. This is a very risky strategy since, as mentioned above, at the end of the day it all comes back to Microsoft. The general consensus is that Microsoft is very focused on generating license sales in the short-term, but does not get involved in helping partners craft strategies for long-term growth and development of their businesses. Microsoft sees SureStep as an important way to control quality in the market, but it is a very new methodology, and has not yet been widely adopted by the partners. Most of the larger partners have developed and are using their own methodology. SureStep could also be a useful tool to help with scope management, a key factor in reducing TCO.

### 9.20.2 Product

Office integration has a positive effect over pre-sales, sales and implementation.

The use of .NET is helping partners to integrate solutions.

MS is placing their products in different market positioning but partners are selling where they can.

NAV and AX are more usable, it seems the MS effect over the products.

Now they have new opportunities of cross selling, CRM, outlook, Sharepoint, etcetera.

There is a risk, Dynamics is more complex and needs more configuration than other MS products, and these products are more closely to IT departments than business managers.

#### *9.20.3 Externalization*

There is a difficulty for partners to understand why MS is externalizing: certification, training, partners activation, etc.

#### *9.20.4 Microsoft Services*

Sometimes MS need to be the prime contractor to access an account, after that they have to subcontract partners, but it's important to establish the criteria to do it, and partners should prepare to afford it.

#### *9.20.5 Market*

Customers in European market demand higher levels of customization than EEUU.