Software Ecosystem Orchestration: The Perspective of Complementors

Completed Research Paper

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Abstract

Software ecosystems (SECOs) driven by platform business models have changed how consumer software is produced and marketed. Also in the enterprise software segment, value networks in the form of SECOs are replacing traditional business models and linear value chains. These SECOs involve three main types of actors: platform sponsor, complementors, and customers. Platform sponsor strategies have been researched broadly, but not the view of complementors. Further, there are few studies of real-world SECOs. In our research, we have investigated the complementor’s perspective on SECOs and their partnership with the platform sponsor. Through exploratory qualitative research using a practical case from the enterprise software industry, we have developed a partner management framework comprising the complementors’ value creation process, goals, enablers, and instruments. The model can be used generally to gain a better understanding of complementors, and by platform sponsors to improve their partner management processes.

Keywords

software ecosystem, complementor, orchestration, platform business model

Introduction

Platform business models in the software industry have gained much attention in past years; prominent examples in the consumer mobile software segment include Apple’s App Store (http://itunes.apple.com) and Google’s Play store (http://play.google.com) and their underlying development platforms. Enterprise software vendors introduced the model in these examples to their own domain – for example, the SalesForce.com “AppExchange” (https://appexchange.salesforce.com) and the SAP Store (www.sapstore.com). Both platforms include an online store and development platforms on which to build applications (cf. Beimborn et al. 2011).

A platform business model in the software industry involves the following roles: a platform sponsor, complementors, and end customers. The platform sponsor provides a “platform service,” that is, a technical software platform and associated services (e.g., enablement, certification, marketing) and an organizational model (e.g., processes, terms and conditions). Complementors build applications using the development platform and services (Eisenmann et al. 2009). The applications are purchased by end customers.

Timmers (1998) defines a business model as “an architecture for the product, service and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various business actors; and a description of the sources of revenues.”
In contrast to traditional business models with predominantly linear value chains, the platform sponsor opens its interfaces to external complementary resources and targets two mutually dependent markets: those of complementors and of customers (Scholten; Legner and Giessmann 2013). Complementors, a platform sponsor, and customers form a software ecosystem (SECO) that can be defined as “a set of businesses functioning as a unit and interacting with a shared market for software and services, together with the relationships among them. These relationships are frequently underpinned by a common technological platform or market and operate through the exchange of information, resources and artifacts” (Jansen et al. 2009). Hence, SECOs are value networks with interwoven value creation processes.

The platform sponsor must orchestrate the SECO, that is, align its processes with those of the complementors to deliver a consistent offering to customers (Iansiti and Levien 2004; Jansen et al. 2009). The sheer volume of complementors in SECOs (e.g., Microsoft’s partner network includes ~390,000 organizations (Del Nibletto 2010)) demands a high level of standardization and automation in the management of the co-value-creation processes. In practice, the management of complementors is referred to as partner management.

Prior studies have focused on the platform sponsor’s perspective and are highly strategy oriented (Selander et al. 2013; Iansiti and Levien 2004). The perspective of complementors on the partner management – their goals, required resources, and instruments – has barely been examined (van den Berk et al. 2010; Ghazawneh and Henfridsson 2013). However, understanding the complementor’s motivations, goals, and processes is the first step in successful partner management (Yoffie and Kwak 2006). Further, academic research on SECOs is still young and few publications exist analyzing management practices in real-world SECOs, particularly in the enterprise software domain (Manikas and Hansen 2013). Therefore, we chose to investigate a real-world SECO in the enterprise software segment.

We address three research questions:

- Why do complementors cooperate with platform sponsors?
- How do complementors define their value creation process within SECOs?
- What are the platform’s key enablers to support complementors in reaching their goals?

Ours is a qualitative research approach using a case study design in a single organizational context. We employed semi-structured interviews and qualitative data analysis on the Grounded Theory (GT) framework (Glaser and Strauss 1967), including a systematic literature review, to discuss our empirical findings in the context of existing research.

Ultimately, this study’s objective is to gain a sharper picture of the role of complementors in SECOs by identifying their goals, interaction process with platform sponsors, and related enablers to achieve those goals.

The result of this study, addressed to researchers and practitioners alike, is a comprehensive partner management framework addressing the three research questions. The framework can be used by complementors to assess and redefine their activities within SECOs, as well as by platform sponsors to design appropriate partner management processes and instruments serving complementors.

**Related Work**

** Constituents of a Software Ecosystem and their Functions **

Software ecosystems are a complex, multi-faceted phenomenon that is studied from a software engineering, economic, social, and network theoretical perspective (Barbosa et al. 2013). Little research exists on concrete management methods in proprietary SECOs, but there has been considerable work on SECO roles and functions.

Iansiti and Levien (2004) refer to the platform sponsor as a “keystone player” in the ecosystem, securing value creation and distribution among participants. From a network perspective, the sponsor is referred to as “hub” that maintains relationships with nearly all participants (Burkard et al. 2012; Kude et al. 2012). Jansen and Cusumano (2013) describe the platform sponsor’s function as that of an “ecosystem coordinator” and “orchestrator” (van Angeren et al. 2013; Leten et al. 2013; Jansen et al. 2009). The
sponsor provides and maintains the underpinning platform technologies and facilitates interaction between actors (Eisenmann et al. 2006).

Complementors are referred to as “niche players” by Iansiti and Levien (2004) that deliver products for special niche markets with particular functional requirements. Eisenmann et al. (2009) call them “supply-side platform users.” Platforms provide generic functionality used by many different platform users. Combined with the specific functionality from complementors, comprehensive solutions are created to satisfy the specific demands of end customers. Gawer and Cusumano (2013) define a platform as “products, services or technologies ... which serve as foundations upon which a larger number of firms can build further complementary innovations, in the form of specific products, related services or component technologies.” Others also count additional development tools and governance rules as part of the platform (Boudreau 2010; Eisenmann et al. 2009).

The relationship between complementors and platform sponsor can be characterized as “loosely coupled” (Dhanaraj and Parkhe 2006). Hoffmann (2007) stresses that the configuration of the alliance portfolio of a firm – that is, the number, intensity, dispersion, and stability of linkages – is dependent on and changes with its strategic focus.

**Management of Complementors**

One major promise of platforms is that they exhibit network effects, meaning the value and attractiveness of the platform and complementary products rise as more complementors and customers use the platform (Katz and Shapiro 1985). Sponsoring a platform, however, also comes with costs for the platform sponsor (Eisenmann et al. 2006). These include maintaining the platform technologies and related services as well as safeguarding against risks from participants’ opportunistic behavior. It is crucial that the platform sponsor find a balance between control and self-organization of the ecosystem so the value created by the ecosystem is not extinguished by the costs of maintaining the multitude of partnerships (Williamson and Mayer 2012). Tiwana (2008) defines control as formal and informal mechanisms of the platform sponsor to evoke desired behavior by partners.

Because of the multitude of relationships, Den Hartigh et al. (2013) assert that the management of a partner ecosystem requires a different approach than traditional management of bilateral strategic partnerships. They characterize this management style as more hands-off supporting of partners to guide them in the right direction. Rather than setting top-down goals, this approach leverages the fact that platform sponsor and complementors share similar goals, such as selling products to customers.

Das and Teng (2003) use the term “alliance performance” to describe the success of an alliance, meaning the degree to which each party achieves its partnership-related goals. The alliance is successful only if all parties achieve their goals to a certain degree.

Much research has focused on the goals of the platform sponsor and possible strategic factors for successful partner management. These include, for example, providing a guiding vision for the ecosystem’s future (Hagel et al. 2008), balancing formal and informal control (Yoffie and Kwak 2006), adequate platform design (Cusumano and Gawer 2002), installing mechanisms for value appropriation, and encouraging flexibility and learning (Williamson and Mayer 2012).

As Yoffie and Kwak (2006) emphasize, the first step in building successful partner management is understanding the complementors’ perspective. However, a holistic view of the perspective of complementors on the partnership has yet to be established. We, therefore, studied what is of major importance to complementors and how they respond to concrete instruments used by platform sponsors. This approach is close to partner management studies that have looked at the resources platform sponsors provide. Ghazawneh and Henfridsson (2013) refer to these as “boundary resources” – tools and rules that build an interface to partners. Ahuja (2000) has found three types of resources to be important for alliance formation: technical, commercial, and social capital. Kude et al. (2012) have shown that these resources positively influence complementors’ decisions to join SECOs. Many studies, though, suggest that access to the platform sponsor’s customers is the biggest motivator for complementors to join an ecosystem (Ceccagnoli et al. 2012; Chellappa and Saraf 2010; Huang et al. 2009).
Methodology

Research Design and Methods

We employ an exploratory qualitative research approach using a case study design. Exploratory qualitative research is favored in situations where little empirical data exist and the structures of the phenomenon under study are unclear (Bryman and Bell 2011). Case study designs are used to investigate contemporary phenomena in depth and are preferred where the unit of analysis cannot be clearly isolated from its surrounding context (Yin 2013; Dubé and Paré 2003). The behavior of complementors is strongly interrelated with other variables and entities of the related SECO (e.g., platform sponsor, market, customer, and technology) and therefore a case study design seems most appropriate.

Our primary data collection was through semi-structured interviews. The research process (Figure 1) was guided by Grounded Theory (Glaser and Strauss 1967), a systematic approach that combines multiple principles and techniques to collect and analyze qualitative data with the aim of theory building. GT suits our research objectives for two main reasons: it allows us to build a theoretical framework bottom-up from the data without prior hypothesis (Urquhart et al. 2010), which fits well with the exploratory research approach; and it is particularly useful in studying processes (Corbin and Strauss 2008; Glaser 1978), which supports our objective of understanding the complementors' value creation process.

GT proposes an iterative approach of data collection and data analysis. Concepts are developed through continual comparison of new data slices with those already coded to see whether major concepts emerge. As coding progresses and concepts emerge, new data are added through theoretical sampling, shifting the focus to concepts of interest and their relationships.

We conducted two rounds of data collection and data analysis, using an adjusted interview guide in the second round based on preliminary developed concepts.

![Figure 1: Research process](image)

Case Study Context

We selected the SAP development partner ecosystem for our case study. SAP is a leading provider of enterprise software and also provides a development platform to partner companies, including multiple platform technologies, a related development partner program (“SAP PartnerEdge Program for Application Development” (SAP 2013)), and its own version of an App Store, the SAP Store (SAP 2014). The program bundles platform technologies, resources, and instruments to support partners throughout
their value creation process of building software applications. Partner applications are either standalone or extensions to SAP’s core products (e.g., SAP Business Suite), all of which must be certified by SAP and can subsequently be marketed through the SAP Store. SAP structures its partners’ value creation process in four phases: “get started,” “become a partner,” “build,” and “publish & sell” (SAP 2013).

**Research Process**

In this section, we detail our research process according to the phases in Figure 1.

**Preparation**

We were guided by a preliminary literature review (as summarized in the related work section) in sharpening the research objectives and defining the semi-structured interview guide. The guide begins with profile questions about the interviewees, their companies, and their partnership with SAP. The main part of the interview guide was structured according to SAP’s four phases of the value creation process. For each phase, we asked which course of action the company took and why, which problems occurred and why, how problems were resolved, and what information, service, or resources were used to achieve the objectives in each phase. The interview guide was pre-tested with a SAP Partner Manager and then slightly adjusted in structure and terminology.

**Data Collection (First Round)**

We conducted two rounds of interviews to collect data between May and November 2013. First, we identified 20 interview candidates using the following selection criteria: company is signed up in the SAP Application Developer program, has an application in development or already developed, and companies have different geographic origins and sizes. Candidates were approached via e-mail and eight companies agreed to an interview (Table 1). The interviews were conducted by phone, each lasting 40–60 minutes. We guaranteed full anonymity of the interviewees and their companies. The interviews were recorded and then fully transcribed and anonymized. Overall, we recorded 480 minutes and produced 123 pages of transcripts (for both interview rounds).

<table>
<thead>
<tr>
<th>#</th>
<th>Job Role of Interviewee</th>
<th>Location of Headquarter</th>
<th>Interview Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product manager</td>
<td>Denmark</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Head of consulting unit</td>
<td>Germany</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>CEO</td>
<td>USA</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>CEO</td>
<td>USA</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Head of development</td>
<td>Germany</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>CEO</td>
<td>USA</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Project manager</td>
<td>USA</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Lead developer</td>
<td>Netherlands</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Lead developer, Project manager</td>
<td>Germany</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Head of marketing and sales</td>
<td>Germany</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Software architect, Product manager</td>
<td>Poland</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Head of business development &amp; head of consulting unit</td>
<td>Germany</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1: Overview Interview Sample
Data Analysis (Substantive Coding)

Data analysis was performed using a computer-aided qualitative analysis tool that enabled us to build a consolidated research data base including all recordings, transcripts, and associated codes. We also used memo writing and integrative diagrams throughout the process to document emerging theoretical ideas.

Open coding was applied to the first four of the eight interviews of this first round, that is, we developed codes from the data line-by-line. Open codes were step-by-step consolidated and more abstract concepts emerged, including the core concept “perceived helpfulness to achieve own goals”. According to Corbin and Strauss (2008), the core concept needs to be sufficiently generic to embrace all other concepts, should appear frequently in the data, and should explain the behavior of the interviewee in a meaningful way. The second four of the eight interviews were then selectively coded mainly using the consolidated codes to reach saturation. It is important to note, though, that the entire data analysis according to GT involves iterations. Hence, new open codes for the further interviews were also included in the code book, and already coded interviews were re-coded with selective codes. Figure 2 shows an example of our coding procedure.

<table>
<thead>
<tr>
<th>Open Codes</th>
<th>Selective Codes</th>
<th>Theoretical Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>speed of process, seamlessness of process, transparency of process, synchronization with partner process</td>
<td>lifecycle flow</td>
<td>asset</td>
</tr>
<tr>
<td>knowledge, customer base, community, lifecycle infrastructure, brand image</td>
<td>resource sharing</td>
<td></td>
</tr>
<tr>
<td>info sharing on future vision, change management, openness towards partner, activeness of keystone, portfolio alignment, keystone seen as advisor, investment of keystone in ecosystem</td>
<td>leadership</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Coding examples used for open, selective and theoretical coding

Data Collection (Second Round)

We refined the preliminarily developed concepts in the second round of data collection and identified and investigated the key relationships between the concepts. The initial interview guide was adjusted to give more attention to the concepts of interest, such as the core concept and its relation to other concepts. For example, we asked which criteria were important for partners to evaluate when considering whether to enter or continue a partnership and about the role played by personal contact with the partner manager. The adjusted interview guide also included more questions on the partnership in general, such as those concerning the partner’s aims and expectations with the partnership, the motivation to join the partner program, satisfaction with the partnership, and proposals for general improvements.

Theoretical sampling was applied as well to select partner companies that used different SAP platform technologies than those in the first interview round to elicit whether platform technology is a relevant factor.

We invited eight interview candidates for the second round; four agreed to be interviewed (Table 1). The invitation and procedure were the same as for the first round.

Theory Building

During theoretical coding, we used the transcripts and memos with our theoretical ideas specifically to look for relationships between the concepts. Activities were ordered and summarized into phases and integrated into a value creation process from a partner’s perspective. Tools and methods used by partners were categorized as instruments according to their functions. Other concepts were categorized as goals.
pursued by partners, enablers to help achieve these goals, effects describing a partner’s perception and feelings, and influencers (i.e., factors that additionally influence a partner’s perception).

We conducted a systematic literature review to gather further evidence on possible relationships between these major concepts and the core concept. Following the recommendations of Webster and Watson (2002), we searched the top ten IS journals according to a ranking by AIS (2013a), all journals from the “Senior Scholars’ Basket of Journals” (AIS 2013b), and the Thomson Reuters Web of Knowledge and EBSCOhost databases. Based on title and abstract, we found relevant literature from three major strands: software ecosystems, platform economy, and classic forms of alliances. We could then discuss our empirical findings in the context of previous studies and integrate them with existing theories.

Table 2 summarizes the journals, databases, and keywords for which we searched.

<table>
<thead>
<tr>
<th>Keywords</th>
<th>Journals</th>
<th>Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>software ecosystem</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>partner ecosystem</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>complementor</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>partner management</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>partner relationship management</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>co-innovation</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>partner innovation</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>platform business</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>platform economics</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>software platform</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>partner network</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>collaborative network</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>innovation network</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>business ecosystem</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>business network</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>two-sided market</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>multi-sided market</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>complementary product</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>cooperative management</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>app store</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>ecosystem orchestration</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Table 2: Sources and keywords for the literature review

Finally, we discussed the interview results in a focus group with seven members of SAP’s organizational unit for partner management. The discussion showed that our findings were compatible with partner managers’ experience regarding what they find important and what problems they encounter.

Presentation of Results

The “Partner Management Framework” presented in Figure 3 comprises all concepts developed in our analysis. It includes complementors’ “goals,” “enablers” to reach those goals, the “effects” describing partners’ perceptions of the partnership, and “influencers.” The “instruments” can be interpreted as concrete instances of the “enablers.” Furthermore, the value creation process can be seen as the recurring stages complementors typically go through when creating value in a SECO, which we refer to as the complementors’ lifecycle.

The framework illustrates important aspects of the partnership from the complementors’ perspective. We call it a “Partner Management Framework” because platform sponsors can use it as a foundation to establish and manage their SECO partnerships.
Goals of Complementors

We differentiate four “goals” complementors pursue with their partnership with a platform sponsor. First, complementors target better “customer access” by improving their visibility, that is, the likelihood customers gain awareness, and credibility, that is, the customers’ trust in the quality of the complementor’s products. By partnering with the platform sponsor and following its strategic or technological guidance, complementors further hope to do better at meeting “customer demand.”

The goal of “integration” is related to customer access and demand: complementors often develop enhancements to the platform sponsor’s core application, rather than standalone applications. The integration of these enhancements with platform core products is a means of customer access.

The fourth and more long-term goal of complementors is “expansion” of their business and customer base by growing into new functional areas or using new technologies provided by the platform, or by extending their partnership. This goal is also a dedicated phase in the complementors’ lifecycle.

Enablers and Instruments

To achieve the goals, the complementors employ “enablers” implemented by “instruments” and used in different lifecycle phases. The first and probably most important enabler is “resource sharing.” For example, the platform sponsor can share access to its customer base or share its brand image by providing partnership logos or certifications and thus increasing complementor credibility. Knowledge of how to develop enterprise applications using the platform technologies, integrate with platform products, or sell...
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applications via an online channel (i.e., SAP Store) are other important resources. In the case of SAP, information resources are offered via the “SAP Apps Development Partner Center” website that provides information for each lifecycle phase; these self-service resources are complemented by offline and online training. The community network (i.e., forums and blogs) is another helpful resource, providing individuals (developers or users) from SAP, partners, and customers the opportunity to connect, share insights, and collaborate. The community is also a means of knowledge archival and exchange in the SECO.

The second enabler is the “lifecycle flow” supported by corresponding infrastructure tools. In SAP’s case, the most important tools are the development environment and platform technologies to develop applications and the “SAP Store” marketing and sales channel.

Speed – that is, the process cycle time (e.g., time to market) – is an important property of this lifecycle process. Enablers and instruments are therefore also rated by their ability to accelerate execution of dedicated process steps. Process events defined by the platform sponsor, and internal processes, typical determine the lifecycle of the complementor. It is therefore important that the platform sponsor be transparent about the platform-determined process parts and ensure their compatibility with the complementor’s company-internal processes. Speed, transparency, and comprehensiveness make up the “lifecycle flow.”

The third enabler is “leadership” by the platform sponsor, which has several aspects. The complementor requires knowledge about the platform sponsor’s plans regarding future marketing strategies and the evolution of platform technologies to create a meaningful portfolio and business plan. Sharing information on the future vision for the SECO is therefore critical to complementors. Platform change management is another important leadership aspect; for example, platform interface changes should be communicated early and options for coping with such changes provided.

“Personal contact” was identified as an important instrument for nearly all interviewed partners. It cannot be clearly assigned to a single enabler and plays an important role throughout the lifecycle. In the SAP case, personal contact between SAP and its partners is maintained through partner conferences, webinars, and dedicated partner managers who as single points of contact coordinate issue resolution between partners and SAP.

**Effects and Influencers**

The core concept developed from our analysis is the complementors’ “perceived usefulness of the partnership to achieve their goals.” It is a major determinant of how the entire partnership is evaluated and thus influences the decision to partner or continue a partnership. How well the perception meets actual target achievement will influence complementors’ “satisfaction” with the partnership. Partners’ evaluate the partnership with respect to how well they achieve their goals with the offered enablers and instruments. Perceived usefulness and satisfaction are outcomes of this evaluation, which we call “effects.”

Moreover, we found that complementors’ perception of the partnership is influenced by two additional concepts. “Trust” in the platform sponsor that a certain platform or technology trend will be successful affects positively the decision to partner or continue the partnership. “Ecosystem experience” – that is, if partners already had a connection to the ecosystem in form of joint projects or former partnerships – also seemed to influence positively complementors’ decision to partner.

**Complementors’ Lifecycle**

The complementors’ lifecycle resembles a process co-determined by the complementor and the platform sponsor. We differentiated nine phases specific to our SAP case study. First, complementors need to “become aware” of the platform offering. They then “evaluate” the platform in terms of technical feasibility and formal aspects (e.g., terms and costs). In this phase, partners evaluate whether they will be able to achieve their goals with the help of the enablers offered by the platform sponsor. The perceived helpfulness of the partnership to achieve goals, trust in the platform sponsor, and existing ecosystem experience are concepts influencing this decision.
Next, the complementor will “partner” by signing up to the platform sponsor’s partner program. Partners will then “set up” their development environment and begin to “develop” the application, which once completed must be certified (SAP checks whether the application meets certain quality standards). Only then can the application enter the “market” and “sell” phases (in our case, through the SAP Store). Once an application is sold, complementors also support end customers to “deploy and implement” the solution.

Finally, complementors search for further opportunities to “expand” their business, which our results indicate they prefer to be within their existing SECO. They evaluate other offerings and products in the ecosystem that can be easily combined with their existing application. This step begins the lifecycle again, with another phase of evaluation. Here it is important that platform sponsors provide these opportunities for further advancement to retain SECO partners. In the SAP case, partners who initially developed mobile applications were seizing opportunities with SAP cloud technology.

**Discussion of Results**

Our findings complement and support those in other studies. The goal “customer access” is mentioned as complementors’ major objective in joining SECOs (Ceccagnoli et al. 2012; Huang et al. 2013). Chellappa and Saraf (2010) identify “signaling compatibility with the platform sponsor” as a key motivator for complementors to partner. The goals of integration and customer access (and its property visibility) in our study are confirmation. Furthermore, our study proposes two additional complementors goals when joining a SECO: meeting customer demand and business expansion. Platform sponsors should actively address these aspects, for example, by showing domain leadership (customer demand) or providing growth opportunities for their partners (expansion).

The enabler “resource sharing” is an important theme in alliance literature (Ahuja 2000; Kude et al. 2012). We complement the work of Ghazawneh and Henfridsson (2010) by showing which resources are important from the complementors’ perspective. Further, the concept of “leadership,” especially the aspect of providing a vision for the ecosystem, is mentioned by others (Cusumano and Gawer 2002; Hagel et al. 2008; Williamson and Mayer 2012). In addition, Chellappa and Saraf (2010) see change management as a typical challenge for platform sponsors. The enabler concept “lifecycle flow” – with its properties speed, transparency, and comprehensiveness – has only been addressed in part in the literature; for example, Benlian et al. (2011) highlight the positive influence of transparency of governance processes. Viewing partners not as an homogenous mass but in their different stages of the lifecycle helps platform sponsors develop measures more specific to the complementor’s lifecycle phase.

The degree to which the enablers help or promise to help complementors reach their goals largely affects the complementors’ satisfaction and perceived usefulness of the partnership, which we found to be the core concept. Other aspects influencing complementors’ perceived usefulness and satisfaction with the partnership, especially their decisions to enter or continue partnerships, are trust in the platform sponsor and experience within the SECO. Trust proves to be an important mechanism in alliances (Gulati 1995; Sarker et al. 2012). Ariño et al. (2001) state that experience with a partner is an essential part of partnerships. Gulati (1995) explains that repeated interaction between partners leads to familiarity, which in turn can lead to trust.

Contrasting the perspectives of platform sponsors and complementors, we detect a potential conflict. From the platform sponsor’s perspective, partner management is oriented towards the entire network of complementors, meaning the simultaneous management of a multitude of partnerships. This becomes apparent with measures to standardize and automate processes, reduce personal contact, and thus reduce costs. Partners, though, seem to understand the partnership more as a dyadic relationship to one strategic partner – often their entire business case relies on this single partnership. This is supported by the fact that concepts from traditional strategic alliance literature such as trust and experience can be applied to understand the perspective of partners. In addition, we found that personal contact plays an important role for partners in building trust. When designing partner management processes and instruments, the requirement for standardization and automation and demand for individualization must be balanced (Huber et al. 2010; Kude et al. 2008).
Limitations and Future Research

Qualitative research is generally influenced by the subjective view of the researchers (Braun und Clarke 2013). By choosing GT and adhering to certain research strategies proposed by Yin (2013), we tried to address issues with external and internal reliability, and internal validity inherent to qualitative research. For example, we documented our research process in as detailed a manner as possible, built a central database including all case study evidence, and reviewed interview guides and results with subject matter experts.

We differentiate between statistical and analytical generalizability (external validity) (Yin 2013) with respect to our results. No qualitative study is generalizable in the statistical sense, and a case study design is itself no statistical sample but a chance to gain deep insight into a phenomenon (Yin 2013). Nevertheless, we believe that the criterion of analytical generalizability – that is, the scope of a theory (Urquhart 2013) – can be applied. Abstraction is a means of improving analytical generalizability (Urquhart 2013; Yin 2013); our proposed partner management framework formulates concepts on a high level of abstraction, and we believe it can be applied well to other enterprise SECO cases. Moreover, we believe ecosystems as they have evolved in the software industry will also develop in other industries, driven and enabled by the “digitization of the value chain.” The findings presented in SECO studies will therefore contribute to a more general understanding of the mechanics in ecosystems.

We further addressed generalizability by integrating our empirical findings with existing theories (Eisenhardt 1989). We propose to perform further studies in varying contexts and with different cases to derive best-practice design rules for partner management in SECOs. We encourage studies with quantitative designs to validate our qualitative results.

Conclusion

Our research investigated the complementors’ perspective on SECOs and their partnership with platform sponsors. By employing a qualitative research design based on a case study and GT, we developed a partner management framework comprising a concept model (goals, enablers, instruments, effects, and influencers) and a process model of the complementors’ lifecycle. The goals identified explain why complementors cooperate with platform sponsors (research question 1); the process model details how complementors define their value creation process within SECOs (research question 2); and the enablers and instruments answer how best to support complementors in reaching their goals (research question 3).

Platform sponsors may use our results to improve their partner management processes and better orchestrate their SECOs. Complementors can benefit by using our framework to assess their objectives and adjust their SECO activities, or even in deciding whether to partner with a platform sponsor. Researchers can use our concepts to understand better the inner mechanics of SECOs from a complementor’s point of view.

References


