Online Communities and Dynamic Capabilities:
A Cross-Case Examination of Sensing, Seizing, and Reconfiguration

Research-in-Progress

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ABSTRACT

Strategy researchers have long been concerned with the sources of competitive advantage, i.e., why some firms' performance is superior over others. One argument to answer this question is provided by the dynamic capability view which posits that some firms are better at adapting to a changing business environment than others. This study scrutinizes online communities and their interplay with dynamic capabilities. We present evidence which shows that organizations may use online communities to sense and shape opportunities and threats, to seize opportunities, and to reconfigure the enterprise's intangible and tangible assets, thus helping their host organizations adapt to a changing business environment. In doing so, the paper bridges the strategy and the information systems literature and provides novel empirical insights into the strategic use of information technology.

Keywords

Strategic use of information technology, dynamic capabilities, online communities, multiple case study

INTRODUCTION

Over the past years, new technologies have become ubiquitous, affecting how we communicate, maintain relationships, and collaborate (Rainie and Wellman, 2012). This development has been paralleled by the rise of a new organizational form, i.e., online communities (OCs). Drawing on Sproull and Arriaga (2007), Faraj and colleagues define OCs as "collectives of dispersed individuals, whose members share a common interest, experience, or conviction and positive regard for other members, who interact with one another and contribute to the collectivity primarily via the Internet, and these communities attend to both their individual and their collective welfare" (2011, p. 1224). Organizations now engage in a variety of community settings within and across firm boundaries (Gulati et al., 2012; McAfee, 2009).

OCs have further been shown to be particularly advantageous for knowledge collaboration (Faraj et al., 2011). Knowledge is a key resource for many organizations (Spender and Grant, 1996) and constitutes perhaps the core component of dynamic capabilities (Augier and Teece, 2007). Dynamic capabilities (DCs) are defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997, p. 516). DCs, a prominent research subject in the IS community as well as among strategy scholars, can be "disaggregated into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets" (Teece 2007, p. 1319).

Given their potential for knowledge collaboration and, thus, their likely impact on DCs, one would assume that strategy scholars have a vested interest in the use of OCs by organizations. Yet, despite their rising popularity in practical settings (Chui et al., 2012; Kane et al., 2009) and calls to integrate them into the research agenda of DCs scholars (Majchrzak 2009), the strategic implications of OCs have been largely neglected to date (Haefliger et al., 2011). This leads us to formulate the following research question: *How may online communities affect an organization's dynamic capabilities, more specifically the sensing and shaping of opportunities and threats, the seizing of opportunities, and the reconfiguration of resources*?

In order to answer this question, we thoroughly review the literature and present empirical data derived from a series of case studies. This paper contributes to theory by explicitly linking strategy and information systems research, a suggestion that has recently been put forward by Argote and Ren (2012), for example. The paper further provides guidance to community managers, enabling them to put their communities to strategic use.

THEORETICAL BACKGROUND

Strategic Management and Dynamic Capabilities

Dynamic capabilities have emerged as a major focus of inquiry in the field of strategic management (Eisenhardt and Martin, 2000; Helfat et al., 2009; Teece, 2007). The aim of the research program is to unravel the mechanisms that allow organizations to adapt their resource base to a changing environment in order to achieve a sustained competitive advantage. Helfat and colleagues state that this quest "might well be characterized as the Holy Grail of strategic management" (2009, p. 91). DCs can be defined as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997, p. 516). According to Teece, DCs can be "disaggregated into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets" (2007, p. 1319). While DCs have been espoused by the scientific community with much enthusiasm, considerable disagreement remains, even concerning their most basic aspects, such as their definition (Di Stefano et al., 2010). Some scholars remain skeptical about the DC view (Arend and Bromiley, 2009), others argue that more effort should be devoted to improving existing ideas and integrating disparate viewpoints (Peteraf et al., 2013).

Online Communities and Their Strategic Implications

OCs are virtual organizational forms (Faraj et al., 2011) which constitute rich communication environments for organizations (Treem and Leonardi, 2012). They have been used by firms to engage and harness the knowledge of employees, customers, and the wider public (Gulati et al., 2012; Kraut and Resnick, 2011; McAfee, 2009). Drawing on Sproull and Arriaga (2007), Faraj and colleagues (2011, p. 1224) define OCs as "collectives of dispersed individuals, whose members share a common interest, experience, or conviction and positive regard for other members, who interact with one another and contribute to the collectivity primarily via the Internet, and these communities attend to both their individual and their collective welfare". OCs are part of a development in which information technology plays an increasingly important role for organizing and managing social relations (Zammuto et al., 2007).

Few attempts have been made to scrutinize OCs from a strategic viewpoint (Haefliger et al., 2011). One of the counterexamples is an article by Gulati and colleagues (2012) which introduces boundary permeability (openness) and stratification (hierarchy) as a way to distinguish between different types of communities. Majchrzak (2009) explicitly calls on dynamic capabilities researchers to consider the impact of OCs on their theoretic models. Argote and Ren (2012) take this idea one step further. In their essay, they analyze transactive memory systems, which display information about 'who knows what' in an organization. They suggest that the use of such a system facilitates the building, reconfiguration, and integration of organizational resources, particularly knowledge assets.

RESEARCH METHODOLOGY

The research project is designed as a multiple case study (Yin, 2009). The case study method is prominent in the field of management and strategy (Eisenhardt and Graebner, 2007; Eisenhardt, 1989; Gibbert et al., 2008) and has been extensively used for research on information systems (Benbasat et al., 1987; Cavaye, 1996). Teece (2012) posits that case studies have much potential to advance knowledge on DCs. Likewise, case studies are deemed particularly suitable to advance theorize OCs (Urquhart and Vaast, 2012). Drawing on multiple case studies allows us to compare them along key constructs. Langley and Abdallah (2011) have called this approach to case study research the Eisenhardt Method.

To date, we studied eight firms from various industries, as illustrated in Table 1. As for case selection, we used a mix of theory-based and criterion sampling (Miles and Huberman, 1994). Initially, we approached the management of the German Association for Community Management. Given the research question and the management's knowledge of the membership base, several member organizations were identified as potential study candidates. Since the association caters to the profession of community managers, individual members have much relevant expertise regarding the functioning and the management of their respective communities. The study relies on several data sources, including quantitative and qualitative data from semi-structured interviews, archival data from corporate documents, such as websites, press releases, and annual reports, observations from company visits, and emails, phone calls, and follow-up interviews. Several organizations had previously been engaged in university collaborations; therefore various unpublished and published studies were also available for inspection. Wherever possible, reports from industry associations were also collected. The primary data source was a 60- to 90-minute interview with a community manager of the organization. Each interview consisted of five sections: 1) personal information on the interviewee and the community management (team) of the organization, 2) background information on the firm and its competitive positioning, 3) details about the business environment and its dynamism, 4) details about the community and its functioning, and 5) business impacts of the community. Interview data was repeatedly triangulated with

other types of evidence, thereby enhancing the robustness of the results (Yin, 2009). The interview data has been transcribed and coded, resulting in several hundred pages of transcripts. We promised confidentiality in order to encourage honest and open responses.

Case Number	Industry	Revenue in 2011	Employees in 2012	Founded	Purpose of the Community
Case 1	Internet, publishing, automotive	n/a	25	2001	Inform and connect automobile enthusiasts, provision of self-help
Case 2	Internet, e-commerce, retail	€ 455 m	400	2004	Generation of detailed product reviews for existing and potential buyers
Case 3	Publishing, advertising	€ 1,100 m	15,000	1948	Generation of local news
Case 4	Retail	€ 1,950 m	6,000	1962	Provision of information for potential buyers
Case 5	Internet, location-based services	€ 62 m	1,200	2004	Help people find local services
Case 6	Internet, entertainment	€ 140 m	600	2003	Connect gamers
Case 7	Manufacturing, automotive	€ 69,000 m	102,000	1916	Exchange of ideas, innovation
Case 8	Manufacturing, automotive	€ 11,000 m	15,300	1931	Exchange of ideas, innovation

Table 1. Description of Cases

DATA ANALYSIS AND PRELIMINARY RESULTS

While Table 1 provides a summary of the organizations hosting the communities, the data analysis and results section sheds more light on community characteristics and their strategic uses. Following the transcription of the interviews, we imported all material into software for qualitative data analysis (Bazeley, 2007). We then coded and analyzed the material (Miles and Huberman, 1994). Being aware of the literature on OCs and DCs, we examined the data for the emergence of both well-established constructs and emerging ones. Finally, we used within-case and cross-case analysis in order to derive meaningful comparisons of both cases and constructs (Eisenhardt, 1989; Miles and Huberman, 1994; Yin, 2009).

General Community Characteristics

The communities analyzed differ substantially along key dimensions, as illustrated in Table 2. The size of the community management team is a distinct characteristic. The gaming community (Case 6), for example, is run by a team of 60 community managers, all of whom are full-time employees of the host organization. Given that the organization employs roughly 600 people, the community management makes up roughly 10 per cent of the total workforce, a significant amount. The target groups of the communities differ widely. While some have potential relevance for almost the entire population (Case 5), others are niche outlets for only a small part of an organization's overall workforce, e.g., innovators (Case 8). Community size and activity are rudimentary proxies of what emerged as an important construct throughout the interviews, i.e., community health. Community health can be defined "the extent to which an organism's vital systems are performing normally at any given time" (Wang and Lantzy, 2011, p. 3). Following Gulati and colleagues (2012), we further consider community boundaries and distinguish between open and closed communities. The innovation communities (Case 7 and Case 8), for example, are designed for employees only and are, thus, closed. Lastly, we were also interested in how the community helps the organization to create and appropriate value, a discussion that has been initiated by Haefliger and colleagues (2011). The automobile community (Case 1) generates revenues through ads, campaigns, and surveys, for example.

Case Number	Size of CM Team	Type of Member	Community Size	Activity	Community Boundaries	Value of Community to Organization
Case 1	5	Automobile	2.1 m	350,000	Open	Monetization of content through

		enthusiasts		posts/month		ads, campaigns, surveys
Case 2	4	Existing and potential buyers	n/a	4,000 posts per month	Open	Increase sales, decrease product returns, search engine optimization
Case 3	80-90	Citizen reporters	28,000	250,000 posts, 1.5 m photos	Open	Building online presence, brand awareness, monetization of content through ads
Case 4	1	Existing and potential buyers	n/a	n/a	n/a	Sales support, gaining new customers
Case 5	60	User of local services (anyone)	n/a	17 m reviews	Open	Monetization of content through ads
Case 6	65	Gamer	300 m	n/a	Open	Sales support, understanding customer preferences
Case 7	15	Employees	1,200	n/a	Closed	Combination of idea generation and project management
Case 8	2-3	Employees	n/a	n/a	Closed	Idea generation, increase amount of internal innovations

Table 2. Community Characteristics

Strategic Implications of Online Communities

In this section, we report on the findings regarding the strategic implications of OCs. In particular, we focus on the analysis of instances where organizations are using their OCs for sensing and shaping opportunities and threats, seizing opportunities, and reconfiguration of tangible and intangible resources (Teece, 2007). Furthermore, we evaluate the strategic relevance of OCs. In general terms, a community is considered strategically relevant if it is critical to existing operations and critical to the future success of the host organization (Neumann et al., 1992). An overview of the results is provided in Table 3. While the cases vary widely in terms of strategic uses and strategic relevance, there are a few instances where OCs make a clear and distinct contribution to DCs. Not surprisingly, these OCs are also of high strategic relevance within their host organizations. We consider these as revelatory cases (Miles and Huberman, 1994; Yin, 2009). For better visibility, they have been assigned two crosses. The revelatory cases will be presented in more detail below.

Case Number	Sensing and Shaping of Opportunities and Threats	Seizing of Opportunities	Reconfiguration of Tangible and Intangible Resources	Strategic Relevance
Case 1	X	X	0	High
Case 2	XX	X	0	High
Case 3	X	X	XX	High
Case 4	0	0	0	Low
Case 5	X	0	0	High
Case 6	X	0	0	Medium
Case 7	X	XX	X	High
Case 8	0	X	0	Low

Table 3. Strategic Community Implications

Sensing and Shaping Opportunities and Threats

According to Teece, sensing comprises "analytical systems (and individual capacities) to learn and to sense, filter, shape, and calibrate opportunities" (2007, p. 1326). Case 2 provides a particular illustrative example of how sensing takes place in an OC aimed at potential and current customers in the online retailing industry. The OC gives everyone a chance to post questions and comments. The community manager reports being the direct interface between the organization and the public:

"We have recently switched shipping services from [Company A] to [Company B]. We now also offer deliveries via [Company C]. It was my task to see how people would react to these changes, whether there are any complaints. If so, I would need to speak to the board of directors to let them know what isn't working." (Community Manager 2)

The company further prides itself on being able to predict market trends well, as is stated prominently on its website. The community manager attributes much of this competence to the insights generated in the OC. In other words, the sensing of customer preferences takes place in the OC. As the citation implies, the community manager sits on both the strategy and the innovation committee in his organization, guaranteeing that relevant information is passed on to the board of directors.

Seizing Opportunities

Teece states that "once an opportunity is sensed, it must be addressed through new products, processes, or services. This almost always requires investments in development and commercialization activity" (2007, p. 1326). Case 7 describes an OC with a focus on innovation at an international automotive manufacturer. The OC in question facilitates both idea generation and project management. It presents an insightful application of how the OC allows the organization to seize a business opportunity. In the words of a community manager:

"The idea about [Product A] was initially posted to the community. It was taken up by the right people, who were also able to develop the idea further. The project was pitched in the right types of committees, later it received the necessary funding. Ultimately, [Product A] was developed in cooperation with the same people who initially suggested it." (Community Manager 7)

It is interesting to note that the product idea was suggested and further developed in the OC. Later, it was successfully commercialized. Therefore, the case represents an almost ideal-type description of the seizing mechanism described by Teece (2007). The host organization considers itself to be an innovation leader in the automotive industry and is well positioned within the premium segment. The OC is considered strategically relevant; it is sponsored by and attached to the central innovation department.

Reconfiguration of Tangible and Intangible Resources

When Teece talks of a reconfiguration of resources, he refers to a "continuous alignment and realignment of specific tangible and intangible assets" (2007, p. 1340). We observe such a realignment of resources in Case 3, which features an OC hosted by a major European publishing company. The OC is designed to produce relevant local content for free, weekly advertising papers. Such content was previously produced by local editors, who can now draw on the submissions of so called citizen reporters:

"When we introduced the community, our editors were thrown in at the deep end. They were used to producing offline editorial content for the advertising papers about once or twice a week. None of them had an affinity for producing content online, nor did they want to do it. I needed to convince them that, if done skillfully, they could draw on the citizen reporters to get this task done." (Community Manager 3)

Financial reports show that the revenues of the host organization have been decreasing for the past decade. The industry revenues of advertising papers have been stagnating for the past five years. Arguably, the organization was under pressure to innovate its advertising paper business and successfully introduced value co-creation with help of the OC. The host organization has recently been awarded a prize for their community engagement from an international umbrella organization.

DISCUSSION AND IMPLICATIONS

This paper explores DCs by focusing on the impact of OCs on organizational adaptation. We began by noting that such strategic considerations were previously absent from the literature on OCs (Haefliger et al., 2011; Majchrzak, 2009). Given that a substantial amount of economic organization is realized through these new organizational forms, a focus on internal organization seems outdated or incomplete (Gulati et al., 2012). By selecting cases from a variety of community settings, our study allows greater focus on the strategic impact of OCs. We identify three revelatory cases which show that OCs have great potential to help organizations sense and shape opportunities and threats, seize opportunities, and reconfigure tangible and intangible resources (Teece, 2007). However, when reviewing the full amount of cases, it becomes obvious that the observed effect varies. It is telling that few OCs are good at targeting more than one out of the three subcapacities; only two of the OCs manage to support all three (Case 3 and Case 7).

Prior research suggests that boundary-spanning activities drive organizational performance because they enhance access to diverse information (Burt, 2003; Obstfeld, 2005). Our study connects to this literature by viewing OCs as boundary-spanners

between previously unconnected organizational stakeholders (Levina and Vaast, 2005). Generally, it seems that OCs are most effective when they provide new or enrich existing communication environments that transcend traditional organizational boundaries (Gulati et al., 2012). In Case 2, for example, the OC is used to enhance information exchanges between the organization and its existing and potential customers. Giving them the chance to raise questions or post comments to the community, a feature that has elsewhere been described as authoring (McAfee, 2009), and being able to publicly and persistently display these results, a feature that has elsewhere been described as reviewability (Faraj et al., 2011), not only allows the organization to respond to those queries directly and immediately, but also other members of the OC. As a result, the information that becomes available to the organization increases drastically, allowing its employees to forecast industry trends and changing consumer preferences. In Case 7, the OC facilitates work on a joint project among employees of the same organization; however this happens without formal control or mandate. It is achieved through the power of association (Treem and Leonardi, 2012), i.e., by making visible the connections between employees and their shared areas of interest.

Contribution to Theory

Our core theoretical contribution is to link strategy and information systems research (Majchrzak, 2009). Our study augments the DC view by working toward explicitly integrating OCs into the concept (Argote and Ren, 2012). We aim to clarify that OCs are central to strategy because of their potential for economic value creation and transcending traditional organizational boundaries (Gulati et al., 2012; Haefliger et al., 2011). Lastly, the paper contributes to the conversation on new organizational forms, showing evidence that organizations may become more adaptable and dynamic through the use of OCs (Faraj et al., 2011; Galunic and Eisenhardt, 2001).

Contribution to Practice

While the use of OCs in organizations is on the rise (Chui et al., 2012), the community management function is still new in many organizations and not yet well understood (Kane et al., 2009). In fact, the community managers have a plethora of data at their disposal (Giles, 2012; Lazer et al., 2009), but few of them are able to make sense of it (Larson and Watson, 2011). This paper helps them to understand the strategic role their communities play. By providing insights into a few revelatory cases, it is shown how OCs may help their organizations to sense and shape opportunities and threats, seize opportunities, and reconfigure tangible and intangible resources, thus contributing to their organization's ability to adapt to a changing environment. Furthermore, OCs are particularly effective when they help transcend traditional organizational boundaries by establishing new or improving existing communication environments between previously separated or fragmented organizational stakeholders.

Limitations and Future Work

As in all research, it is important to specify boundary conditions. First of all, our focus is on competitive advantage and, thus, the potential benefits associated with the use of OCs by organizations. As a consequence, we did not explore their drawbacks. This does not mean, however, that we are neglecting this issue. It provides fruitful avenues for future research (von Krogh, 2012). In addition, Case 4 teaches us that that OCs do not necessarily take a strategic role. In fact, in this case the OC has a negligible impact. It therefore represents an extreme case or a boundary condition. The reason for this is that the OC is functioning mainly as an extension of the sales department, providing information and reviews about new products, for example. Purchases, however, are mainly made in physical stores and there is little incentive for customers to interact online. This is in stark contrast with Case 2, for example, where the organization is an electronic retailer and potential customers are probably browsing the website to make a purchase. In short, there seems to be a strategic misfit of the OC in Case 4 and the boundary it is attempting to bridge. The in-store sales personnel seem to be in a much better position to engage and inform customers than the OC. We conclude that transcending boundaries remains a major potential of OCs. The potential can only be realized, however, if the OC provides a clear and tangible benefit to its users. In Case 2, for example, OC members can view and traverse product ratings by other customers, thereby discovering benefits and flaws of an item which, in turn, makes their purchasing decision easier. Last but not least, we acknowledge that we have not yet fully explored the complex interplay of OCs and DCs. While the above results are promising, a more detailed analysis is still to follow. The work of Koch (2010), in particular, has great potential to guide our future endeavors.

A recent theme in the literature on DCs has focused on their microfoundations (Felin et al., 2012; Teece, 2007). Microfoundations underlie "individual-level and group-level actions that shape strategy, organization, and, more broadly, DCs, and lead to the emergence of superior organization-level performance" (Eisenhardt et al., 2010, p. 1263). Felin and his collaborators (2012) cluster microfoundations into three overarching categories: individuals, processes and interactions, and structure. Having presented evidence that OCs affect sensing, seizing, and reconfiguration, we encourage future studies to explore under which conditions this is the case, i.e., to analyze their microfoundations. Given the clustering by Felin and

colleagues (2012), for example, one could ask: Who are the most central individuals in the OC? Which processes and interactions drive OC performance? Which kind of structure within the OC facilitates relevant outcomes?

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