Knowledge Management From A Paradox Perspective - Siemens Healthcare’s Approach To Organizational Tensions In The Field Of Knowledge Management

OLIVER WOLFARTH¹, EVA GATTNAR², BRIGITTE STROETMANN², OKAN EKINCI²
Siemens Healthcare GmbH
¹Hartmannstraße 16, Erlangen; ²Allee am Röthelheimpark 3a, Erlangen
GERMANY

Abstract: Knowledge management is increasingly confronted with contradictory demands as corporate environments become more global, unpredictable, and complex. In the recent past, more and more academic researchers have adopted a paradoxical lens when dealing with organizational contradictions. This article, therefore, aims at combining Siemens Healthcare’s knowledge management approach with the current paradox literature. To facilitate a full understanding of this matter, it is at first defined what paradox is and is not. Paradoxes of learning, belonging, and organizing are then introduced and specified on a general level. Based on the presented theoretical foundations, Siemens Healthcare’s knowledge management strategy is evaluated from the perspective of the three paradoxes discussed here. It becomes apparent that the simultaneous organizational pursuit of divergent contradictions enables more comprehensive knowledge management efforts that can benefit firm’s overall business activities and competitiveness.

Keywords: Knowledge Management, Organizational Knowledge, Organizational Learning, Business Excellence, Paradox Theory, Learning, Organizing, Belonging

1 Introduction and outline

Nowadays, firms are increasingly confronted with different internal and external influencing factors. The globalization of markets as well as shorter innovation and product lifecycles describe typical challenges of external influencing factors [1]. Questions of how to design a lean supply chain or how to efficiently allocate financial, physical and personal resources rank among important internal design parameters [2]. Numerous strategic options and their interactions have to be thoroughly considered to create reinforcing value chain activities.

Therefore, having access to all the relevant information and organizational knowledge is of paramount importance for business success [3], [4]. The rising significance of knowledge management is reflected in the fact that this area of research has been an important topic in recent scientific studies and management practice [5], [6], [7], [8].

Thus, successfully managing knowledge has become a crucial differentiation factor for Siemens Healthcare to initiate sustainable operations worldwide. Siemens Healthcare pursues an active knowledge management strategy, as the healthcare industry regularly undergoes fundamental changes and requires an in-depth market and customer understanding. To survive and thrive in this dynamic and complex environment, it is essential to build upon already existing organizational knowledge. However, long-run success also requires continuous efforts to destroy the past and make room for new ways of creating, sharing and storing knowledge.

Owing to the competing yet interrelated characteristics above, knowledge management faces various organizational contradictions. Consequently, the question arises: What is the best method to consolidate conflicting elements in the field of knowledge management?

When dealing with contradictory demands, organizational researchers have increasingly adopted a paradoxical lens in the more recent past [9], [10], [11], [12]. Paradox studies are based on the central assumption that long-term competitiveness demands ongoing efforts to meet divergent tensions [9], [11], [13].

It is the purpose of this paper to present Siemens Healthcare’s approach to organizational tensions in the field of knowledge management and link it to the current paradox literature. Therein lies the interest in writing the present publication.
2 Theoretical and Conceptual Foundations of Paradox Studies

To facilitate a full and comprehensive understanding of paradox research, central theoretical and conceptual foundations are introduced in the following two sub-sections. The first sub-section focuses on defining what paradox is and is not. The latter sub-section specifies three organizational tensions – paradoxes of learning, belonging, and organizing – that typically appear in the context of knowledge management [5].

2.1 Definition and Delimitation

Paradoxical situations and their inherent contradictions have been analyzed and examined since ancient times [12], [14], [15]. Although organizational researchers made important contributions to the understanding of what paradox is [9], [11], [15], the paradox literature still often lacks definitional clarity and coherence [9]. Due to this, Table 1 gives a compact overview of widely accepted definitions of the term paradox.

Moreover, the terms paradox, dilemma, and dialectic are often used in scientific literature when analyzing tensions or contradictions [9], [10]. An in-depth understanding of the true meaning of paradox, therefore, demands a concise distinction between the three terms. Their differences are additionally highlighted by a graphical illustration (Fig. 1).

Paradox: According to the earlier definitions, the simultaneous and long-term existence of conflicting elements is a substantial characteristic of paradoxes [9], [10], [17], [18]. The Taoist yin and yang symbol highlights the fact that these contradictions are interrelated and part of a bigger whole [19].

Dilemma: A dilemma describes contradictory components, each with clear advantages and disadvantages. Having thoroughly analyzed each component, the problem is resolved by either-or choices. This approach is depicted by a scale [9], [10], [18], [20]. In business studies, make-or-buy decisions characterize a typical dilemma.

Dialectic: Dialectic defines the process of resolving competing elements (thesis A and antithesis B) through integration and synthesis, which creates a new element C. The whole process starts anew if an additional element D surfaces that stands in contrast to the combined element C [9], [10], [14], [18].

<table>
<thead>
<tr>
<th>Source</th>
<th>Title</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Heigenoort [16]</td>
<td>Logical Paradoxes</td>
<td>A paradox consists of two contrary or even contradictory propositions to which we are led by apparently sound arguments.</td>
</tr>
<tr>
<td>Quinn &amp; Cameron</td>
<td>Organizational Paradox and Transformation</td>
<td>Both of the contradictory elements in a paradox are accepted and present. Both operate simultaneously. They key characteristic in paradox is the simultaneous presence of contradictory, even mutually exclusive elements.</td>
</tr>
<tr>
<td>Ford &amp; Backoff</td>
<td>Organizational Change in and out of Dualities and Paradox</td>
<td>Some “thing” that is constructed by individuals when oppositional tendencies are brought into recognizable proximity through reflection or interaction.</td>
</tr>
<tr>
<td>Poole &amp; Van De Ven [12]</td>
<td>Using Paradox to Build Management and Organization Theories</td>
<td>Taken singly, each proposition is incontestable, but taken together they seem to be inconsistent or incompatible.</td>
</tr>
<tr>
<td>Smith &amp; Lewis [9]</td>
<td>Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing</td>
<td>We define paradox as contradictory yet interrelated elements that exist simultaneously and persist over time. This definition highlights two components of paradox: (1) underlying tensions - that is, elements that seem logical individually but inconsistent and even absurd when juxtaposed - and (2) responses that embrace tensions simultaneously.</td>
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Table 1: Selected definitions of the term paradox

Figure 1: Illustration of the terms paradox, dilemma, and dialectic (On the basis of Smith and Lewis [9])
2.2 Organizational paradoxes

Based on the earlier classifications of Lewis [11], Lüscher and Lewis [20], and Smith and Lewis [9], three organizational tensions – paradoxes of learning, belonging, and organizing – are subsequently presented.

2.2.1 Learning paradoxes

The main source of learning paradoxes emerges from the need to build upon existing knowledge as well as to simultaneously destroy it in order to acquire new competences and move forward [11]. This conflict is usually caused by organizational changes or different modes of knowledge creation, sharing and storing that arise from comparisons of the familiar past with the desirable future [5], [9], [11], [21]. Consequently, paradoxes of learning surface as systems and structures in the firm change, renew, or adapt due to internal and external dynamics [9]. In contrast to the other two paradoxes discussed here, learning paradoxes can occur at different levels in the firm, and therefore may affect individuals, groups or even the corporation itself [21]. The simultaneous pursuit of incremental and disruptive innovations provides a typical example for the occurrence of learning paradoxes [9], [22].

2.2.2 Belonging paradoxes

Belonging paradoxes result from an ambiguous perception of identity, plurality, and belonging [11], [23]. If, for example, company employees follow different norms, guidelines or goals, internal conflicts or a “we-they” dichotomy can be the outcome. This is especially the case at public-private partnerships [9], [15]. Apart from this, individuals, groups or even organizational divisions strive in equal measure for conformity and homogeneity as well as differentiation and separation [9]. When becoming too integrated into a conglomerate, corporate divisions may run the risk of losing their own competitive advantage and uniqueness. However, a strict insistence on divisional interests could also jeopardize organizational collaboration and cooperation. Thus, paradoxes of belonging are essentially fueled by conflicts over identity.

2.2.3 Organizing paradoxes

Contradictory organizational structures, processes or business models lead to paradoxes of organizing [9], [15]. This kind of paradox usually only occurs at higher levels in the firm, as paradoxes of organizing deal with fundamental corporate issues like how to organize and structure the entire company [20]. Hence, organizing paradoxes can generally be explained by tensions between control and flexibility [11], [24], change and routine [25], [26], [27], [28], or differentiation and integration [21], [24]. Conglomerates, for instance, often consist of independent divisions with different processes and structures. Yet these divisions have to be also thoroughly aligned in order to improve the firm’s overall performance and leverage possible synergies [21], [24].

3 Siemens Healthcare’s knowledge management approach

Siemens Healthcare is one of the world’s largest suppliers to the healthcare industry and a leading pioneer in medical imaging and therapy, laboratory diagnostics as well as medical information technology. The following sub-sections describe Siemens Healthcare’s approach to organizational tensions in the field of knowledge management from the perspective of the three paradoxes presented here.

3.1 Knowledge management and paradoxes of learning

It is the sine qua non of knowledge management to make sure that organizational knowledge is not outdated and historical, but always up-to-date [29]. For this reason, Siemens Healthcare initiated the foundation of the Clinical Competence Centers in 2009 (Fig. 2).

![Figure 2: Overview of the Clinical Competence Centers](Image)


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The highly-skilled employees of the Clinical Competence Centers have a medical, technical, commercial or academic background. Their activities involve numerous aspects like analyzing the different healthcare markets worldwide, conducting training and information sessions for Siemens employees or interacting with customers and hospital personnel. In doing so, Siemens Healthcare pursues the objective of constantly expanding the already established knowledge base. The newly obtained knowledge contributes to the further development of medical imaging modalities or to the refinement of service offerings. These incremental innovations usually target the day-to-day business and leverage existing organizational capabilities.

As an industry leader, Siemens Healthcare, however, is equally adept at pioneering radically new products and services. The Clinical Competence Centers maintain an extensive network of key opinion leaders and prominent universities to identify future trends and disruptive ideas at any early stage. To keep up with medical progress and completely new methods of diagnosis and treatment, the physicians of the Clinical Competence Centers also still practice occasionally in hospitals. This approach enables Siemens Healthcare to look beyond the day-to-day business and become aware of future disruptive changes that may require new competences and capabilities.

Considering all aspects, it is obvious that organizational learning is a vital ingredient for the long-term success of an industry leader like Siemens Healthcare. On the one hand, knowledge management has to be geared towards the refinement of the current knowledge base. The selective expansion of organizational knowledge facilitates incremental innovations and reinforces the established organizational structures and core competences with the aim of improving business efficiency. On the other hand, it is also necessary to acquire, share and store knowledge that stands in total contrast to the current way of doing business and even threatens the status quo.

The conflicting demands above lead to learning paradoxes that are consciously fostered by Siemens Healthcare. Only the quest for building upon organizational knowledge as well as simultaneously destroying it permits a holistic perspective of the present and future market place. With this approach, Siemens Healthcare can both explore new and disruptive business opportunities and at the same time serve its day-to-day business with incremental product and service advances.

3.2. Knowledge management and paradoxes of belonging

Siemens Healthcare is divided into four divisions – Imaging & Therapy Systems, Clinical Products, Diagnostics, and Customer Solutions – which again consist of various business units. The single divisions and their related business units pursue own objectives that are not necessarily the same as those of the other business segments.

This results in a heterogeneous demand for organizational knowledge and data. Consequently, the information provided has to be very specific and detailed. Yet the top management team and the strategy unit have a more comprehensive perspective and are mostly interested in general information across the four divisions. Specific data that is helpful for business units may be too granular for the top management, and therefore distract them from the basic essentials of corporate decision making.

In order to ensure an efficient way of providing the right level of information to the right people, Siemens Healthcare decided to operate the knowledge sharing platform medic, which stands for medical & health economic information center (Fig. 3).

![Database](image)

Figure 3: Overview of the medic database

It connects more than 50,000 Siemens Healthcare employees worldwide, and allows online access to scientific medical information, research insights as well as market, technology and trend reports that might be relevant for current or future
business activities. The easy to use, intuitive interface supports individual problem-solving approaches. Depending on the organizational function and role of the medic user, the content can be modified based on different pre-set search criteria. In addition to that, the content is regularly updated and reviewed by employees of the Clinical Competence Centers, which not only includes adding new information to medic, but also eliminating outdated information.

In summary, Medic is a good example of how to successfully deal with paradoxes of belonging in the field of knowledge management. By accessing organizational knowledge that is completely tailored to individual problems and needs, the divisions and business units can foster their own competitive advantage, and hence achieve differentiation and uniqueness. At the same time, the top management team is able to retrieve general data across the several divisions to leverage business synergies and ensure organizational collaboration and conformity. Owing to this knowledge management strategy, all employees are supplied with the right amount of information so that they can focus on their respective tasks but are also aligned with Siemens Healthcare’s overall strategy.

3.3 Knowledge management and paradoxes of organizing

Organizational structures and processes have an important influence on the way knowledge is acquired, shared and stored [30]. A deliberate, standardized and regulatory knowledge management approach benefits formal structures and enables controlled knowledge building activities [31], [32]. By contrast, firms also need to maintain high levels of autonomy [33] with informal, loosely coupled structures to effectively support knowledge management efforts [34].

Siemens Healthcare addresses this contradictory problem from two sides. Everyone at Siemens Healthcare is able to submit academic articles, market reports or interesting findings to medic. There are no further restrictions so that the individual knowledge of each employee can fully accrue to the firm. Apart from this, the employees of the Clinical Competence Centers also monitor scientific literature autonomously to identify new trends and significant research results. These informal, flexible and unstandardized ways of extending organizational knowledge aim at broadening Siemens Healthcare’s perspective.

In a second step, the knowledge management activities are brought into more formal, tightly coupled structures to efficiently exploit the previous efforts. Every document that is submitted to medic is carefully reviewed and analyzed by the Clinical Competence Centers with special focus on its business impact for Siemens Healthcare. Following this procedure, the document is released on medic so that it can be accessed by every user. This ensures high-quality content and prevents an overload of insignificant information. Furthermore, the Clinical Competence Centers also regularly disseminate important findings in a standardized and deliberate way via electronic media, such as the Journal Watch (Fig. 4).

In conclusion, Siemens Healthcare emphasizes flexible and informal as well as regulatory and standardized structures for knowledge management activities. This contradictory organizational set-up leads to paradoxes of organizing. Instead of eliminating these inconsistencies by focusing on either tightly or loosely coupled structures, Siemens Healthcare exploits their interaction. With the aid of an autonomous and unstandardized approach, everyone in the firm is able to contribute to organizational knowledge building. However, a higher of degree of control and routine is also required to ensure efficiency and prevent chaos. Thus, the conflicting elements of organizing paradoxes reinforce each other and improve the overall performance of knowledge management efforts.
4 Conclusion

It is important to note that the different forms of paradox must not be considered independently from each other. In fact, they can occur simultaneously at different levels in the firm and reciprocally influence each other [9], [21], [24]. From a paradox perspective, knowledge management, therefore, takes place at the overlap of paradoxes of learning, belonging and organizing (Fig. 5).

![Figure 5: Overlap of learning, belonging and organizing paradoxes](image)

In order to realize the common interaction of organizational tensions on a more general level, Smith and Lewis [9] have a proposed a dynamic equilibrium model. In contrast to a static equilibrium that responds to imbalances by immediately attempting to regain the steady state position, a dynamic equilibrium never strives toward a fixed steady state. It rather tries to maintain balance by constantly moving forward and backward across the conflicting tensions. As a consequence of that, the conflicting tensions are thoroughly considered, and accordingly can be harnessed to achieve sustainable and long-term benefits.

This view is basically shared by Siemens Healthcare, whereupon the firm’s knowledge management approach can be considered “paradoxical” according to the definition discussed here. However, this does not mean that inconsistent differences have to be met at all costs. It is more about being actively aware of organizational tensions and their opposing poles. Based on this awareness, better and more comprehensive decisions can be made which enable more sophisticated knowledge management strategies and benefits firm’s overall competitiveness.

References


