

ORGANIZATIONAL CHARACTERISTICS AS PRESCRIPTIVE FACTORS OF KNOWLEDGE MANAGEMENT INITIATIVES

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Abstract

The use of knowledge in organizations is largely a discretionary behavior that can be encouraged but not demanded. As such, the firm can only attempt to provide the right conditions for employees to endorse the role of knowledge workers. This paper examines how the organization of the firm affects knowledge management and proposes a new framework showing the prescriptive role of organizational characteristics onto knowledge management initiatives. Based on this framework, the case study of an international pharmaceutical company is presented as qualitative support to the hypothesis that the organization's structure, membership, relationship, and strategy affect knowledge acquisition, sharing, diffusion, and application respectively. This research suggests that practitioners can increase the yield of knowledge by integrating knowledge management upstream into the elementary business processes rather than leaving it discretionary.

Keywords: Knowledge Management, Organization, Profile, Management, KM Value-Chain

Introduction

The use of knowledge in organizations is largely a discretionary behavior that can be encouraged but not demanded by organizations and their management (Kelloway and Barling, 2000). As such, the firm can only attempt to provide the right conditions and enhance the employees' ability, motivation and opportunity in order for them to endorse the role of knowledge worker.

Many frameworks or strategies to implement Knowledge Management (KM) have been tentatively developed in previous research (Holsapple and Joshi, 2000; Rubenstein-Montano et al., 2001; von Krogh et al., 2001; Armistead and Meakins, 2002), however, few have focused on a possible link between the firm's organizational characteristics and KM. The framework introduced here acknowledges the strong role of management in the firm's handling of knowledge and attempts to operationalize the findings of a case study and make them readily usable by practitioners.

This paper presents in section two the theoretical framework and its foundations. Then, section three describes how the case study of a global Japanese pharmaceutical company helps validate that framework using a Boolean approach and content analysis. Section four is a discussion of the case's findings and section five concludes the study.

Theoretical Framework and Research Hypotheses

Theoretical Framework

Knowledge Management is the process for acquiring, storing, diffusing and applying both tacit and explicit knowledge inside and outside the organization's boundaries with the purpose of achieving corporate objectives in the most efficient manner. As KM is most effective when tightly integrated within the organization's processes, organizational characteristics greatly determine the relevant types of KM initiatives and shape the firm's KM policy. As a result, strategic alignment is ensured by the congruence of each step of the KM value-chain with the organizational characteristics of the organization (See Fig. 1).

Organizational Characteristics							
STRUCTURE		MEMBERSHIP		RELATIONSHIP		STRATEGY	
Vertical	Horizontal	Individual	Collective	Systematic	Ad-hoc	Reactive	Innovative
Focused	Opportunistic	Private	Public	Prescribed	Adaptive	Exploitative	Explorative
ACQUISITION		STORAGE		DIFFUSION		APPLICATION	
KM Value-Chain							

Fig. 1: Organizational characteristics as prescriptive factors of Knowledge Management initiatives

For example, the acquisition (and/or creation) of knowledge in the organization will greatly depend on its structure, knowledge storage on its membership attribute, knowledge diffusion on its relationship pattern, and knowledge implementation on its strategy.

Each organizational characteristic can be depicted as adopting mostly one form or another, based on the qualitative and quantitative distribution of its constituents. For instance, *structure* can be either vertical or horizontal; *membership*, individual or collective; *relationship*, systematic or ad-hoc; and *strategy*, reactive or innovative. Each of these 8 attributes of organizational characteristics promotes a specific feature of the KM value-chain: vertical (horizontal) structure supports focused (opportunistic) knowledge *acquisition*; individual (collective) membership supports private (public) knowledge *storage*; systematic (ad-hoc) relationship supports prescribed (adaptive) knowledge *diffusion*; reactive (innovative) strategy supports exploitative (explorative) knowledge *application*.

These dimensions of managerial functions give rise to two contrasting managerial models (Simon, 1946, 1957; Nonaka and Takeuchi, 1995); the first one called "bureaucracy", emphasizes vertical structure, individual membership, systematic relationships, and a reactive strategy; the second one called "taskforce", stresses horizontal structure, collective membership, ad-hoc relationships, and an innovative strategy. Businesses are rarely of one type or the other but they rather emerge as a mix of characteristics ranging between these 2 extremes. In return, the distinct combinations of organizational characteristics produce unique organizations in need of custom-made KM initiatives.

This definition of KM is consistent with the knowledge value-chain approach common to many KM descriptions (Shin et al., 2001) and the efficiency priority of KM within the organization (Alavi and Leidner, 1999; Drucker, 2001). The KM value-chain mirrors the knowledge-creating view of the firm, which defines knowledge as a process of justifying belief toward the truth (Nonaka and Takeuchi, 1995). The conversion processes between tacit and explicit knowledge (Socialization, Externalization, Combination, and Internalization, or SECI) help synthesize subjective values into objective and socially-shared knowledge. The knowledge-creation process

starts with socialization where the tacit knowledge of customers and competitors is *acquired* through field-building. That knowledge is then externalized through dialogue into explicit knowledge to be *shared* within the firm. Next, the explicit knowledge is in a form appropriate to be *diffused* throughout the organization and combined with other existing knowledge. Subsequently, these complex sets of explicit knowledge are internalized by the firm through its workers to determine its most favorable *application* and put it in action.

Let's now look in detail at the relation between each organizational characteristics and its associated KM step in the value-chain.

Research Hypotheses

Structure and Knowledge Acquisition

Most organizations can be classified as either vertically or horizontally structured. Some aspects of vertically-structured organizations include specialized tasks, a strict hierarchy with many rules, vertical communication and reporting systems, few teams or task forces, and centralized decision-making. On the other side of the spectrum, horizontal structure involves shared tasks and empowerment, a more relaxed hierarchy with fewer rules, horizontal face-to-face communication, more teams or task forces, and decentralized decision-making (Ranson et al., 1980). These specific features lead to different benefits: control, efficiency, stability, and reliability in the former; coordination, change, learning, innovation, and flexibility in the latter. The nature of the vertical structure emphasizes depth, while that of the horizontal one stresses breadth. There are advantages to both types of organization even though the vertical one may have a higher cost (Simon, 1976).

Knowledge acquisition is the process of gaining new knowledge, from either inside or outside the organization. Even though acquisition supposes that knowledge already exists and is brought in from another location, the fact that this already-existing knowledge becomes part of the organization gives it the status of new knowledge inside the firm. To some extent, knowledge creation is the acquisition of knowledge from within the organization, while knowledge addition is the acquisition of knowledge from outside the organization. As the difference between knowledge creation and acquisition is not the focus of this paper, both will be used interchangeably. Knowledge acquisition is a social process that occurs between individuals (Nonaka and Takeuchi, 1995) where the role of the organization is to provide the proper contexts or situations for knowledge acquisition to occur according to the corporate objective.

As a consequence of structure, the knowledge gained or acquired in each type of organization is much different as it is restricted in breadth in the vertical organization, whereas it is limited in depth in the horizontal one. For example, in an automobile assembly plant, a line worker can concentrate on his few routines to perform each task always more efficiently, therefore producing a focused acquisition of knowledge; however, in a horizontally-structured plant, that same worker shares several tasks across numerous teams requiring flexibility and learning, hence creating an opportunistic acquisition of knowledge.

Furthermore, since knowledge has been recognized as either tacit or explicit (Polanyi, 1966), its identification has grown from its visible to its less visible side. In any organization, the challenge is to accept that not all knowledge is in a form to be readily shared, diffused, or implemented. On the one hand, tacit knowledge is the one knowledge making individuals and organizations competitive and unique since it is not easily transferable or reproducible. On the other hand, because of its very nature, it can be difficult for the organization to recognize it and use it to its fullest potential. Explicit knowledge, on the other side of the spectrum, is easier to

document and therefore transmit and efficiently use. However, because of its relative ease of spread, it is more of a commodity and may not always create a source of competitive advantage.

Membership and Knowledge Storage

The concept of membership whereby the worker is a member of the firm, deals with the extent to which the employee feels part of that organization. To belong to an organization implies that one subscribes to the values, policies or objectives of the group, since at least contractually, one is free to withdraw if an impossible conflict arises. Membership is a subjective social factor that can be expressed objectively when examining the system of incentives and rewards, the dissemination of best practices and corporate vision across the whole firm, and the duration of initial training.

Membership is, if not a means, then an end of the organization in its pursuit of corporate goals. Membership can be a source of motivation when the goals of the organizations are aligned with those of the employee. For the employee, membership exists at several ontological levels - company, division, branch, department, and team - reflecting not only the structure of the organization, but also its culture fostering identification.

Membership can be either collective or individual, depending on whether the employee identifies with one (or several) team(s) or doesn't recognize his or her interests in those of the group. A person identifies him or herself with a group when, in making decisions, he or she evaluates the several alternatives of choice in terms of their consequences for the specified group. Collective membership ensures that the decisions that an employee makes as a member of an organization are consistent with its personal decisions (Simon, 1946).

As knowledge is created at the individual level (Nonaka and Takeuchi, 1995), the type of membership of each employee, individual or collective, strongly influences the sharing patterns of knowledge within the organization. Knowledge can be more valuable when accessible, shared and combined with other knowledge in order to create even more powerful knowledge for the organization or the individual; as a result, membership-induced knowledge sharing is instrumental in the snowball effect of knowledge creation within the organization.

In general, organizations are systems of cooperative behaviors where the issue of coordination remains; cooperation is the sharing of common goals, and coordination is the process of informing each worker as to the planned behaviors of the others (Simon, 1946). An organization fosters cooperation since it usually provides a common goal redefined at each sublevel of hierarchy. The issue of coordination is more challenging as it depends on the level of identification of its members and their sharing of tacit and explicit knowledge with the relevant partners. In this regard, public storage of knowledge enables knowledge sharing, while private storage hinders it. The role of knowledge storage is to reinforce this lack of coordination since it makes available the knowledge from and to all the members of the organization.

When membership is individual, knowledge is considered as a tool for personal achievement and an output of the organization for the benefit of the employee. When membership is collective, knowledge is seen as benefiting both the organization and the employee and is perceived as both an input and an output of the organization to the employee and reciprocally (See Fig. 2). In the same perspective, knowledge is considered to be "owned" by the individual in the case of individual membership, and by the organization in the case of collective membership. When knowledge is individually owned, it is seen as a source of personal competitive advantage and as a resource worth trading, leading to private knowledge storage within the organization. When knowledge is collectively owned on the other hand, it is considered as a source of both organizational and personal competitive advantage and as a resource worth disclosing as every worker is trusted to do, prompting to public knowledge

storage within the company. This organizational characteristic is deeply rooted in the culture of the organization and is consequently not easily changed.

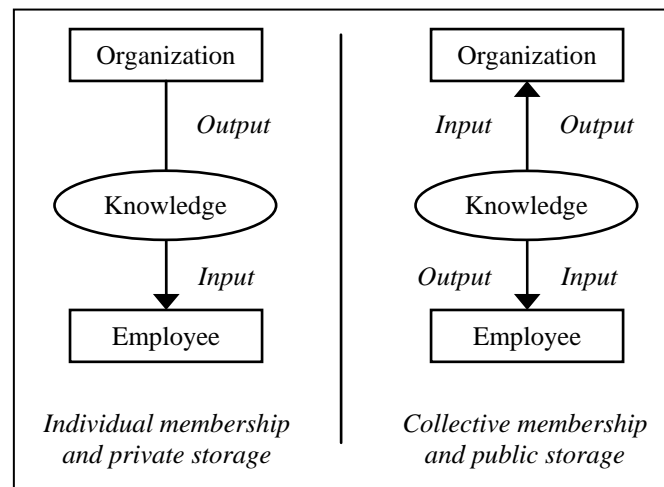


Fig. 2: Organizational membership and knowledge storage

Relationship and Knowledge Diffusion

The organization needs to identify these relationships making up the complete organizational communication network in order to capture the knowledge being transmitted. Relationships within the firm can be of two types, systematic or ad-hoc. One visible determinant of relationships is the use of taskforces tailored to tackle specific issues. These customized teams bring people from different backgrounds and areas together, enabling a potentially richer and opportunistic cross-pollination.

On the one hand, formal organizations provide a set of written rules leaving very little discretion so as to the choice of communication partners throughout the company. On the other hand, informal organizations leave a large degree of autonomy to its workers to decide which communication channel and recipient fit best the requirements of each situation.

In addition, work conditions influence the occurrence of spontaneous relationships, not always necessarily motivated by an underlying business agenda. For example, the break room is much more than a simple coffee machine spot since it brings people from different departments and ranks together, provided that such interactions are made possible. These enabling factors of communications can either be physical, embodied in the workplace layout, or even virtual, using direct contacts by way of telecommunication networks (phone, Internet).

In practice, most organizations can be both formal and informal, depending on the type of action being concerned. In general, informal communication deals with the selection of final goals where the selection process uses ad-hoc relationships and networks or channels not necessarily defined by the formal hierarchy. However, formal communication concerns the implementation of final goals, which are usually handled through corporate transmission using systematic relationships mirroring the hierarchical structure to ensure a tight execution of the strategy. For example, while the organization may allow some autonomy in contacting directly other team members within the local office where they work, it may not permit communicating with counterparts in another subsidiary without first going through the local chain of command.

The nature of these relationships influences the diffusion of knowledge, where systematic relationships trigger a prescribed diffusion of knowledge, while ad-hoc relationships produce an adaptive diffusion of knowledge. The former uses predetermined routes based on the established hierarchy, while the latter arises from changes in communication paths due to personal relations between coworkers based on the needs of the moment.

Diffusion deals with efficient knowledge flows, which may or may not be a priori embedded within the organization's pattern of systematic relationships as defined in the corporate communication routes and nodes. Even if connections may naturally develop based on individual affinity and initiative, the organization itself can proactively create relationships between those apt at becoming productive senders or receivers. The purpose of knowledge diffusion is to consolidate and make any knowledge available to and useable by all relevant members of the organization. This is especially true when the organization uses adaptive work configurations (transversal or ad-hoc teams) to match the requirements of punctual but crucial projects. Since these teams do not necessarily match the arrangement of predefined systematic relationships, the knowledge having been created may end up getting lost upon completion of the project (Lost Knowledge book), losing any chance of further return (on investment) or diffusion.

As previous research showed (Wenger et al., 2002), firms who encourage social interactions, whether formal or informal, increase opportunities for adaptive knowledge diffusion along ad-hoc networks. Also, it is important to note that the diffusion of knowledge depends more on the purpose and motivation of the preceding relationship than on the nature of knowledge, whether tacit or explicit, as relationships aid to knowledge conversions optimizing for the relevant type of knowledge.

Strategy and Knowledge Application

Strategy is the carefully devised plan of action to efficiently achieve a corporate goal, considering that efficiency is the attainment of maximum value with limited means. Organizational decisions follow a strategy, itself carrying expectations drawn from knowledge. The role of knowledge is to increase the firm's rationality, which involves knowing all the consequences following from each alternative strategy and comparing all the potential outcomes (Simon, 1946). This quest to overcome bounded rationality makes knowledge central, not only in discovering all the consequences of all possible alternatives, but also in identifying the alternatives – or strategies - firsthand.

Strategies can broadly be categorized in 2 types, either offensive or defensive, based on the position of the firm among its competitors and leading to the identification of leaders and followers. On the one hand, the purpose of an offensive strategy for an early mover is to create a sustainable competitive advantage (Porter, 1990) that is made possible only if the organization is ahead of its competition, or in other words, if it addresses a common problem differently through innovation. On the other hand, the goal of a defensive strategy for a late mover is to maintain its position while reacting to its competitor's moves, usually imitating the industry leader and hoping to benefit from its success. In turn, these two opposite strategies can be qualified of innovative versus reactive, as knowledge is used in contrasting ways. Compared to reactive strategies, innovative strategies tend to be self-avowed and are supported by greater autonomy, job rotation and taskforces in order to overcome a higher competitive intensity.

A reactive strategy exploits existing knowledge, whether it is the organization's own or another company's. Exploitation refers in this case to the productive use of existing knowledge to efficiently execute the organization's strategy conforming to practices already tried and true. An innovative strategy uses an explorative approach to knowledge application in order to compete in a new or improved way, yielding new knowledge apt at producing a new competitive advantage or maintaining an existing one. The merits of exploitative knowledge application are the lower cost of imitation and the reduced level of uncertainty of using a tested approach. The benefits of explorative knowledge application are those of early movers in terms of economies of scale, brand recognition, minimum competition and cumulative learning.

The offensive organization has to overcome isomorphic pressures, which force one unit in a population to resemble other units that face the same set of environmental conditions (DiMaggio and Powell, 1983), and therefore constrain them into remaining defensive. These isomorphic pressures affect the application of knowledge as they call for an exploitative rather than an explorative approach.

As previous research showed, knowledge, as a high-value form of information ready to be applied to decisions and actions (Davenport et al., 1998) has become the primary tool of the organization in determining its strategy. Consequently, the first 3 organizational characteristics, structure, membership, and relationship, support and constrain at the same time the strategy of the business. For that matter, the selected strategy should help management adapt the characteristics of the organization in the pursuit of its goals. The KM value-chain reflects this dependency where the acquisition, sharing, and diffusion of knowledge affect its potential application, which should be the starting point of a KM initiative.

Case-Study

Methodology, sample selection and data collection

As a qualitative comparative method is well suited for addressing questions about outcomes resulting from multiple and conjectural causes, a case-oriented approach was selected (Ragin, 1987).

Eisai is a global pharmaceutical corporation that can be qualified in its industry as a medium size company with yearly sales of about 5 billion USD (FY2005) covering both prescription and over-the-counter drugs. Eisai is active primarily in the fields of neurology with Aricept, a treatment for mild-to-moderate Alzheimer's disease, and gastroenterology with Pariet/Aciphex, a proton pump inhibitor for the healing of erosive gastro-esophageal reflux disease and duodenal ulcers. Eisai's global corporate mission is to be a "human healthcare company" or "hhc", where employees give their first thoughts to patients and their families and contribute to increasing their benefits.

As the investigation of organizational characteristics may be potentially affected by regional cultures, the study is focusing on culturally-diverse locations where Eisai has research centers in addition to traditional sales activities. As a result, this survey is covering Eisai offices in the United States, the United Kingdom and Japan.

When comparing qualitative data, it is necessary to prevent bias by tightly matching the qualitative samples. In this research project, consistency was thoroughly built into the selection of the sample by identifying national culture, department activity, product or service, and hierarchical position as key elements for reliable qualitative assessment (See Table 1). Only local nationals from the Japanese headquarters of Eisai as well as its American and British regional offices were included, as perceptions of organizational characteristics may be different across cultures; the survey focused in all 3 locations on the same prescription drug market (Aricept and Pariet/Aciphex), the same sales and marketing department, and retained people from top management, middle management, and front line with a direct hierarchical link between them.

As a result, a total of 9 semi-structured interviews were conducted with Eisai employees holding positions of Sales Director, District Manager, and Medical Representatives, in English (with an interpreter in Japan), on location, between November 2005 and March 2006, each lasting about 90 minutes and being later manually transcribed by the interviewer.

Consistency factor	Action
National culture	Survey local nationals at regional offices in Japan (headquarters), the USA, and the UK
Department activity	Concentrate on a common department (here sales and marketing)
Product / service	Focus on the prescription drug market (Aricept and Pariet/Aciphex)
Hierarchical positions	Select interviewees from top management, middle management, and front line with a direct hierarchical link between them

Table 1: Consistency factors in the sample selection

Organizational Profile Determination

The first step in applying the framework to the case study is to determine the organizational profile of Eisai. In order to position the firm according to each organizational characteristic, a Boolean approach suitable to qualitative comparison was adopted (Ragin, 1987). This method uses binary data representing the two conditions of Boolean algebra where 1 indicates presence (True) and 0 indicates absence (False), and matches the outcomes to truth tables used as references.

From the previous discussion about the construction of the theoretical framework, four variables were identified for each organizational characteristic (See Table 2). Structure (STC) was broken down into the existence of shared as opposed to specialized tasks (STC1), horizontal communication and relaxed hierarchy (STC2), decentralized decision-making (STC3), and the fact that workers belong to many teams or task forces (STC4), with an outcome of 0 showing structure as vertical and an outcome of 1 as horizontal; membership (MEM) into the existence of collective incentives and rewards (MEM1), sharing of corporate vision (MEM2), sharing of best practices (MEM3), and the duration of training (MEM4), with an outcome of 0 showing membership as individual and an outcome of 1 as collective; relationship into the existence of informal communication (REL1), physical communication enablers (REL2), virtual communication enablers (REL3), and the fact that workers belong to many teams or task forces (REL4), with an outcome of 0 showing relationship as systematic and an outcome of 1 as ad-hoc; and strategy (STY) into a self-avowed original strategy (STY1), autonomy (STY2), a job rotation system (STY3), and the fact that workers belong to many teams or task forces (STY4), with an outcome of 0 showing strategy as reactive and an outcome of 1 as innovative. It is worth noting that the variable about whether workers belong to many teams or task forces is common to three organizational characteristics (STC4, REL4, and STY4).

Structure		Membership	
STC1	Shared tasks	MEM1	Collective incentives and rewards
STC2	Horizontal communication, relaxed hierarchy	MEM2	Sharing of corporate vision
STC3	Decentralized decision-making	MEM3	Sharing of best practices
STC4	Many teams or task forces	MEM4	Training duration
Relationship		Strategy	
REL1	Informal communication	STY1	Self-avowed original strategy
REL2	Physical communication enablers	STY2	Autonomy
REL3	Virtual communication enablers	STY3	Job rotation
REL4	Many teams or task forces	STY4	Many teams or task forces

Table 2: Binary variables for determining organizational characteristics

Truth tables establish an outcome following different conditions (See Table 3 and 4). For example, when looking at the structure's alternative #12 (See Table 3), the existence of shared tasks and horizontal communication and the absence of decentralized decision-making and various teams or task forces produce a more vertical-type of structure, as opposed to an horizontal one. These truth tables were constructed by the researcher and checked against the qualitative assessment of a seasoned associate professor in the department of Industrial

Engineering and Management. The assessment of each organizational characteristic's binary condition (presence or absence) was determined based on the detailed transcripts of the 9 interviews (See Table 5).

	Conditions				Outcome	Conditions				Outcome
	STC1	STC2	STC3	STC4		MEM1	MEM2	MEM3	MEM4	
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	1	0	0	0	0	1	0
3	0	0	1	0	1	0	0	1	0	0
4	0	1	0	0	0	0	1	0	0	0
5	0	0	1	1	1	0	0	1	1	1
6	0	1	1	0	1	0	1	1	0	0
7	0	1	0	1	0	0	1	0	1	1
8	0	1	1	1	1	0	1	1	1	1
9	1	0	0	0	0	1	0	0	0	0
10	1	0	0	1	0	1	0	0	1	1
11	1	0	1	0	1	1	0	1	0	0
12	1	1	0	0	0	1	1	0	0	1
13	1	0	1	1	1	1	0	1	1	1
14	1	1	1	0	1	1	1	1	0	1
15	1	1	0	1	1	1	1	0	1	1
16	1	1	1	1	1	1	1	1	1	1

Table 3: Truth tables for the “structure” and “membership” organizational characteristics
 STC outcome: 0= vertical structure; 1= horizontal structure
 MEM outcome: 0=individual membership; 1=collective membership

	Conditions				Outcome	Conditions				Outcome
	REL1	REL2	REL3	REL4		STY1	STY2	STY3	STY4	
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	1	0	0	0	0	1	0
3	0	0	1	0	0	0	0	1	0	0
4	0	1	0	0	0	0	1	0	0	0
5	0	0	1	1	0	0	0	1	1	0
6	0	1	1	0	1	0	1	1	0	1
7	0	1	0	1	0	0	1	0	1	0
8	0	1	1	1	1	0	1	1	1	1
9	1	0	0	0	0	1	0	0	0	0
10	1	0	0	1	1	1	0	0	1	0
11	1	0	1	0	0	1	0	1	0	0
12	1	1	0	0	1	1	1	0	0	1
13	1	0	1	1	1	1	0	1	1	0
14	1	1	1	0	1	1	1	1	0	1
15	1	1	0	1	1	1	1	0	1	1
16	1	1	1	1	1	1	1	1	1	1

Table 4: Truth tables for the “relationship” and “strategy” organizational characteristics
 REL outcome: 0=systematic relationship; 1=ad-hoc relationship
 STY outcome: 0=reactive strategy; 1=innovative strategy

From the 3 opinions provided by the top-management, middle-management, and front-line employees working in a direct chain of command, the organizational profile of their office was determined by taking the “majority” of their views, considering that each employee’s opinion had an equal weight. For example, since in the UK office, both top and middle management employees’ interviews supported an individual style of membership, whereas only the front-line employee’s indicated a collective one, the office is considered as a whole to have an individual style of membership.

	US			UK			JP		
	Top	Middle	Front	Top	Middle	Front	Top	Middle	Front
STC1	1	0	0	1	0	0	0	1	0
STC2	1	1	1	1	1	1	1	1	1
STC3	0	0	0	0	0	0	0	0	0
STC4	1	0	0	1	1	1	1	0	0
Outcome	1	0	0	1	0	0	0	0	0
MEM1	1	0	0	1	0	1	0	0	0
MEM2	1	1	1	1	1	1	1	1	1
MEM3	0	1	1	0	1	1	1	1	1
MEM4	0	0	0	0	0	0	1	1	1
Outcome	0	0	0	0	0	1	1	1	1
REL1	1	1	0	1	1	1	1	1	1
REL2	1	0	0	1	0	0	1	1	1
REL3	1	1	1	1	1	1	1	1	1
REL4	1	0	0	1	1	1	1	0	0
Outcome	1	0	0	1	1	1	1	1	1
STY1	0	0	0	1	1	1	0	0	1
STY2	1	1	0	1	1	1	1	1	1
STY3	0	0	0	0	0	0	1	1	1
STY4	1	0	0	1	1	1	1	0	0
Outcome	0	0	0	1	1	1	1	1	1

Table 5: Organizational characteristics' assessment

The results of the Boolean approach show that despite belonging to the same organization, the 3 regional offices display different organizational characteristics (See Table 6). This diversity allowed a complete exploration of the possible organizational characteristics combinations, with the exception of the first characteristic where all 3 offices display a vertical structure. Then, the US and UK entities show an individual membership compared to a collective one in the Japanese headquarters. Last, the US bureau exhibits systematic relationships and a reactive strategy, while the UK and Japanese workplaces demonstrated ad-hoc relationships and an innovative strategy.

	Structure	Membership	Relationship	Strategy
US	Vertical	Individual	Systematic	Reactive
UK	Vertical	Individual	Ad-hoc	Innovative
JP	Vertical	Collective	Ad-hoc	Innovative

Table 6: Organizational profile of each office

The next step is then to examine the KM profile of each office according to the 4 steps of the KM value-chain presented in the framework. To do so, a thorough qualitative analysis of the interview transcripts yielded the following findings.

Knowledge Management Profile Determination

Knowledge Acquisition

Across the 3 offices, front-line medical representatives (MRs) perform relentlessly the same type of activities, making daily visits to targets while providing relevant information about the drug they market. The American MR explained: "I have a list of 100 doctors that I set up geographically day-by-day on a schedule". Despite a few differences mostly stemming from local regulations— US and UK MRs also meet with patients and distribution partners' counterparts, while Japanese MRs probe drugs wholesalers and pharmacists – they always interact with the same parties and are only familiar with one aspect of the doctor-drug-patient relationship. The English MR pointed out: "We are targeting senior doctors probably because they are the key decision-makers and the ones who prescribe"; and the Japanese one indicated:

“Everyday, I visit wholesalers in the morning and get information from them before seeing doctors”.

Also, the activity of sales is rather focused and intensive and requires MRs to keep visiting their customers to maximize brand exposure, continuously pushing back the attacks of competitors, and providing the latest clinical trial information.

As a result, the knowledge acquisition of all 3 offices can be labeled as focused rather than opportunistic.

Knowledge Storage

Recruitment and training practices greatly influence the sharing and storage of knowledge. On the one hand, the US and UK offices tend to mostly recruit seasoned medical representatives with years of experience working with competitors, subsequently minimizing the time and cost of training that usually lasts less than 3 weeks. As said by the English Sales Director, “We only hire experienced sales reps that have had this position before for up to 20 years; (...) it is our policy to do so”.

On the other hand, the Japanese headquarters seek highly-motivated new graduates with no previous experience and spend 6 months training them, with the first 5 months in the office at headquarters with rotations in different departments. The Japanese approach is consistent with the (now declining) lifetime employment model where employer trades extensive skills training for loyalty. However, American, English and Japanese MRs are mostly rewarded financially according to their personal performance.

In the 3 sales offices, MRs send a monthly detailed field report to their direct manager providing feedback on sales and marketing campaign tools, following a template previously agreed-upon. But as the US and UK offices are not equipped with a centralized knowledge sharing tool, field tips and best practices are not shared across the sales department but generally communicated from the MR to the district manager who forwards them to the sales director if deemed helpful enough. Sometimes, the MR may also call his or her teammates with a tip, but it rarely gets sent to other regional sales teams. According to the American Sales Director, “If a sales rep comes up with a tip, it goes through channels to his manager and then regional director, and I am usually copied in a voicemail; and if I see it can be valuable to other teams, I forward it to the entire sales force”.

Conversely, Japanese MRs must fill out an on-line database of tips, best practices and success/failure stories at least twice a month; that tool is dutifully read by the whole sales organization, from the regional director, to other MRs, contributing to knowledge being seen as both an input and an output. Employees rate each tip with “thank you points” when considered valuable, and medical representatives take pride in achieving high “thank you ratings” from other co-workers. As per the Japanese Sales Director, “The goal is to socialize the knowledge among every rep in Japan”.

Subsequently, the knowledge storage of the US and UK offices can be identified as private, while that of the Japanese headquarters as public.

Knowledge Diffusion

In the 3 offices, MRs use a centralized system, however different, to input the details of their day’s visits, including the doctors’ references, the topics discussed and the objectives for the next visit. However, access to the details of the MRs’ field visits is restricted to his or her manager, and sometimes to the sales director as well. The District Manager of the UK office explained that “My format [of sales and marketing document sent to the representatives] is quite simple and robust with lots of spreadsheets and it tells them everything they need to know”.

Then, as MRs and district managers in the US and the UK work from home, they spend most of their time on the road and rarely come into the office and therefore have few opportunities for interacting with other departments employees and acquiring or sharing knowledge otherwise

overlooked. As made clear by the American Sales Director, “You have to encourage them to share their knowledge but you must also limit the flow of information and filter because if you get 30 voicemails a day on a best practice, nobody is going to listen to them”.

On the contrary, Japanese MRs have their own desk in the office and are seated in front of their district manager, without partitions, in the same room as the regional director. They come to the office at least once in the day and favor face-to-face encounters to email exchanges, having the opportunity to meet coworkers from other departments as well. The Japanese District Manager said that “Face-to-face meetings are good for the socialization of knowledge where MRs try to share their tacit knowledge”. Moreover, consistent with the Japanese work culture, semi-formal drinking parties take place several times a month outside the office with all or part of the team. Also, as a centralized sales-related knowledge sharing tool exists with a monitored usage, knowledge is ensured diffusion to those who need it most, following a “pull” rather than “push” diffusion system.

Even though English MRs don’t go to the office every day, Eisais’s “hhc” mission encourages them to take initiatives; when recently launching a new epilepsy drug in their market, a group of MRs arranged (and were allowed) to sit during patients’ consultations at a local clinic. This project allowed them to build new relationships and top management is now considering making that experience mandatory for other sales teams.

Also, both Japanese and English offices have named within each team a product champion or leader, whose role is to be the local knowledge relay for a specific drug, continuously interacting with the related product manager. In the UK branch, as pointed out by the Sales Director, “The product champion from each sales region shares the best practices collected from the region and gives feedback on the campaign and materials, which are eventually shared with the whole sales force”. In contrast, among American MRs, no such product champion exists, and diffusion of knowledge is mostly achieved using group voice mail within each team.

Accordingly, the knowledge sharing of the US branch can be classified as prescribed, while that of the UK and Japan as adaptive.

Knowledge Application

The “hhc” corporate mission is well communicated and known by all interviewees across the three countries. However, only in the UK and Japan does that corporate vision also translate into concrete actions recognized by the top-management and clearly taken into account as part of their job evaluation. In the UK and Japan, as a task considered in their job evaluation, medical representatives must contribute by participating to “hhc awards” improving the life of patients, in line with the company’s corporate vision. According to the English Sales Director, “MRs are looking for local ways to improve patients’ lives (...); and these initiatives are coming from the reps, not the top”. The Japanese District Manager shed light on the evaluation system where “sales numbers represent 75% and the rest, or 25% is made up of other activities [like hhc]”.

For example in Japan, a team of representatives found out after meeting with a group of pharmacists that one of their drugs was rather difficult to drink and was able to benefit from tips shared by patients with those pharmacists; these tips were later shared through the corporate knowledge-sharing database and are now being used during most doctor visits concerning that drug. In the UK, a team has created an album where Alzheimer’s patients can record their memories as it is sometimes difficult for care-givers or visitors to find discussion topics; also, if patients are moving to a different institution, albums can assist in showing the receiving medical staff the personality or the type of person they were before and in making them appear as living human beings.

On the contrary, most pharmaceutical companies in the US rely on the same doctor-specific prescription drug data that is purchased and updated monthly and enables MRs to follow and keep a close eye on the “writing levels” of their targets. US MRs have less incentive to take initiatives in order to learn more about their market as doctor-specific prescription drug data is

sometimes considered as the ultimate business indicator and tool. It is interesting to observe that Japan doesn't have such system, and that while the UK use a similar tool, the data is only given in aggregates by zip code, thus making its utilization less practical. As stated by the American District Manager, "You pay a significant amount of money to get that kind of data, but it is truly an intricate part of selling, knowing your customers and what is important for them; the last thing we want to do is waste our time and we need to determine what their needs are".

Therefore, the knowledge application of the US office can be seen as exploitative, while that of the UK and Japan as explorative.

Discussion

Corporate Management and Knowledge Management

The case study of the sales department of Eisai across the US, UK and Japan yielded significant results supporting the proposed framework (See Fig. 3).

Organizational Characteristics							
STRUCTURE		MEMBERSHIP		RELATIONSHIP		STRATEGY	
Vertical	Horizontal	Individual	Collective	Systematic	Ad-hoc	Reactive	Innovative
Eisai US	X	-	X		X		X
Eisai UK	X	-	X			X	X
Eisai JP	X	-		X		X	X
Focused	Opportunistic	Private	Public	Prescribed	Adaptive	Exploitative	Explorative
ACQUISITION		STORAGE		DIFFUSION		APPLICATION	
KM Value-Chain							

Fig. 3: Organizational characteristics as prescriptive factors of Knowledge Management initiatives, the case of Eisai

In every case, vertical structure induced focused knowledge acquisition; individual and collective membership, private and public knowledge storage respectively; systematic and ad-hoc relationships, prescribed and adaptive knowledge diffusion respectively; and reactive and innovative strategy, exploitative and explorative knowledge application respectively.

However, because this case study focused on sales organizations which are typically vertically structured with an emphasis on specialized tasks, there was no sufficient qualitative data to reliably validate the relation between horizontal structure and opportunistic knowledge acquisition. One can only assume here that since horizontal structure emphasizes breadth rather than depth in the organization, workers have more autonomy and can therefore gather knowledge from uncharted sources.

As for knowledge acquisition, knowledge storage, diffusion and application are strongly linked to the organization's management policy, related not only to the direct handling of knowledge, but prior to that, to the organizational characteristics encouraging such behaviors. In this regard, KM is not a random output resulting from voluntary actions, but an intentional outcome delivered from carefully designed processes embodied in the entire organization.

Public storage seemed to stem directly in the Japanese office from the mandatory utilization of an on-line sharing tool in place in the department, heavily affecting the productive utilization of knowledge. The adaptive diffusion of knowledge, besides being influenced by its storage, was strongly dependant of the relationships being built in the office, either through physical communication as it is the case in Tokyo, or team projects involving coworkers from different departments as in London; these relationships, far from being voluntary, are always conditions to fulfill basic duties, like checking in the office once a day in Japan, and team projects being

noticeably taken into account for the yearly evaluation in the UK. The explorative application of knowledge was clearly the result of the “hhc” mission of the Eisai group enforced at every level in the Japanese and English offices.

The differences in organizational characteristics among the regional offices of Eisai are possibly linked to national cultural differences in management practices. Although the size of the sample doesn't allow such generalization, previous research on cultural dimensions (Hofstede, 1980) has convincingly showed that people carry “mental programs” which are developed in early childhood and reinforced in schools and organizations, and that these programs are part of national culture.

The framework identified 4 organizational characteristics using an inductive approach and looking at the potential organizational factors affecting KM; however, other researchers may recognize different characteristics responsible for the nature of KM. nevertheless, the case-oriented approach adopted here imposes that the framework be examined as a whole rather than a collection of variables. The hypothesis that organizational characteristics affect KM initiatives is only true for the arrangement of the selected variables shown in the framework.

Research Limitations

It should be noted that even though the 3 business units were matched in terms of sales and marketing activities, their size differed because of the different magnitude of the market each is serving. In this regard, because the number of representatives in the business unit led by the interviewed top-management sales executive differed greatly for the US office, (5 times that of the Tokyo office and 25 times that of the UK subsidiary), the pattern of knowledge diffusion appeared to be compartmented to avoid information overload and irrelevant knowledge-sharing. At the same time, smaller teams allow a more direct and ad-hoc management of knowledge in general. Market and department sizes greatly affect management practices and organizational characteristics, which in turn restrict and shape the KM initiatives.

Moreover, the headquarters in Tokyo have been engaged in knowledge-creation work for a few years, and they have created a dedicated “knowledge-creation department in order to encourage and monitor the development of supporting KM initiatives. Despite these actions starting to spread from the head office to the local offices, they haven't yet spread to the point where successful systems are being replicated in the US and UK. One can expect that the success of the online database to share best practices, as well as the accompanying obligation to use it, will reach the other offices soon.

Conclusion

This framework linking organizational characteristics to KM initiatives has received a first justification using a case-study approach and a qualitative comparative method. One limitation resides in the assessment of the office's organizational profile since the variables describing each organizational characteristic, as well as the outcomes obtained for each combination, were selected by the researcher; other scholars or practitioners could have legitimately chosen other conditions or outcomes and conceivably reached another conclusion. However, as management is not a science consisting of axioms and constants, the variables chosen to describe the organizational profile are valid as long as they are rationally substantiated.

Nevertheless, the findings of this research can already be useful to practitioners so as to realize that KM should be integrated into the elementary business processes rather than be voluntary, optimize the organizational features of sub-teams and obtain the desired output serving the corporate strategy.

Last, in order to conclusively validate the causal link between the firm's features and KM, a quantitative analysis using larger data sets drawn from questionnaires is needed. Subsequently, future research will focus on investigating a more general application of the framework using a variable-oriented approach. Also, as differences emerged in the regional branches of a same company, another avenue for research may consider whether national culture has a unifying influence over organizational characteristics and KM attributes.

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