

The Role of an Enterprise Social Networking Tool on Organisational Knowledge Dynamics

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Abstract: Enterprise social networking (ESN) technologies aim to have a profound impact on knowledge management within companies in making things simpler, more fluid and dynamic for users. Their implementation within organizations raises many questions on their ability to (1) promote knowledge sharing, and (2) create the needed support for knowledge creation. Our study was conducted using Design methodology and carried out within an international company. The company had chosen an ESN tool to develop a dynamic knowledge management system. Three key results have been identified so far. First, the emergence of a virtuous and/or vicious circle of Knowledge Management. Second, well managed gamification can facilitate knowledge diffusion. Third, this type of technology requires a more federative governance, especially at its implementation and initial stages, to build the knowledge management system.

1 INTRODUCTION

The exchange between individuals is at the heart of both KM processes. First, knowledge sharing is made by interactions between people (Nonaka & Takeuchi, 1995; Ikujiro Nonaka, 1994; Ikujiro Nonaka & von Krogh, 2009). To allow the second KM process, knowledge creation, the exchange between individuals is capital to insure knowledge combination (Nahapiet & Ghoshal, 1998; Ikujiro Nonaka & von Krogh, 2009). It has often been facilitated by digital technologies. The domain of knowledge management (KM) was often accompanied by references to the management of information systems (IS) (Gray, 2001; Hwang et al., 2018; Jasimuddin & Zhang, 2011; Kankanhalli et al., 2005; Kim et al., 2016). Digital technologies are today an integral part of businesses, especially for the capitalization of knowledge, the primary purpose of KM (Nonaka, 1994; Nonaka & von Krogh, 2009). These technologies have evolved from knowledge storage (document management, knowledge base) to real exchanges and collaboration. Today, they are part of what is known as web 2.0, defined as applications facilitating interactive information sharing, interoperability and collaboration over the Internet (O'reilly, 2005). This definition shows how much web 2.0 applications are more focused on the

participation of actors in the system than on the technology itself. These more intuitive technologies aim to simplify the usage and streamline interactions, this by achieving fluidity in exchanges (Garud & Kumaraswamy, 2005), simplicity and dynamism in KM (Jasimuddin & Zhang, 2011), elements that are absent from content management tools (also called repository). In this perspective, knowledge exchanges aim to facilitate sharing (purpose of capitalization) and combination (knowledge creation) (Nahapiet & Ghoshal, 1998).

Enterprise social networking (ESN) technologies are evidence of this development; they are often mobilized to support the digital transformation of companies and encourage interactions in order to create a competitive advantage in an increasingly dynamic market (Rayrole et al., 2016). These ESN tools are no longer simple storage or communication tools. By using social network technologies, they also aim to develop the social ties necessary for exchanges and combination of knowledge (Nahapiet & Ghoshal, 1998). A question arises: do ESN create the social ties and collaborative exchanges to build organizational knowledge dynamics?

This article is based on an action research carried out within an international group using the enterprise social network tool - JIVE - to promote knowledge sharing and creation. The first part of the research put in perspective the literature on KM and IS relating to

knowledge exchange, the second will present the methodology used. The third will present briefly the results obtained. They will then be discussed in a fourth and final part.

2 INTERACTIONS IN THE HEART OF KNOWLEDGE MANAGEMENT/DYNAMICS

2.1 Tacit/ Explicit Knowledge Interaction

The interaction between tacit and explicit knowledge is key to understand the way knowledge is created, but also diffused within a group of people (Nonaka & Takeuchi, 1995). Tacit knowledge is embodied in individuals and is more experienced than shared, this is why tacit knowledge is difficult to share (Nonaka & von Krogh, 2009). Explicit knowledge, also called codified knowledge, can take several aspects, more or less abstract, about the “how” and the “why” (Echajari & Thomas, 2015). We speak about knowledge interaction as knowledge never stays in a fixed status, it moves from tacit to explicit and evolves through social exchange (SECI model (Nonaka & Takeuchi, 1995; Nonaka, 1994; Ikujiro Nonaka & von Krogh, 2009)). The tacit/explicit knowledge interaction is source of dynamics.

Furthermore, the re-use of explicit (codified) knowledge in other contexts requires its combination with other elements to favour the creation of new knowledge (Nonaka & von Krogh, 2009). However, this type of transfer raises the question of the capacity of individuals to use codified knowledge in their practices (Ancori, 2000); in other words, it raises the question of the appropriation of codified knowledge. Several forms of codification can be developed that are more or less abstract depending on the objectives of the codification process. Abstraction facilitates the dissemination and the communication of knowledge (Boisot & Li, 2005) but abstract codifications generate a loss of accuracy in the representation of phenomena, requiring the actors who wish to appropriate this knowledge to expend major effort on re-contextualization (Echajari & Thomas, 2015).

2.1.1 Social Dimension of Knowledge Dynamics

Social dimension of the exchange is the second key component of knowledge dynamics. Nonaka and Takeuchi (1995) in their SECI model have put aside

the social dimension to show the importance of tacit/explicit interaction (Nonaka & von Krogh, 2009). According to Kogut and Zander (1992) and Nahapiet and Ghoshal (1998) sharing and creating organizational knowledge is a social process of exchange, absorption and the combination of information and knowledge. Exchange, absorption and combination are complex social processes that reflect the entanglement of knowledge forms in an organization capable of coordinating, structuring, sharing and creating knowledge. The very notion of the organization’s social capital is the source of intellectual capital (Nahapiet & Ghoshal, 1998). Social capital has three dimensions (Nahapiet & Ghoshal, 1998). The first, structural, refers to the configuration and the density of the ties which connect individuals. The second, relational, shapes the social system. It feeds the notion of belonging to a group and defines the context in which communication and exchanges occur between members of an organization (Kankanhalli et al., 2005). Finally, the third dimension is cognitive and promotes a cognitive alignment of individuals which will facilitate the sharing and combination of knowledge.

One of the best examples of organizations capable of coordinating, structuring, sharing and creating knowledge are Communities of Practice (CoP). Wenger (1998) defines CoP by explaining that individuals form a community from the moment they share the same working conditions. This common practice generates a support for collective memory (Wenger, 1998). CoP are therefore original social structures.

However, as Garud and Kumaraswamy (2005) point out, a certain balance between continuity and change is necessary to ensure the dynamics of the knowledge management system. It operates mainly within and between group dynamics. It allows the balancing between the continuity that an epistemic group offers (identity, common thought models) and the change that connections in and between these epistemic communities can produce.

3 KNOWLEDGE MANAGEMENT TOOLS

Technologies dedicated to KM have evolved considerably, from storage tools to collaborative tools.

3.1 KM Tools: From Storage to Collaboration

When we talk about knowledge management, most of the literature refers to codified knowledge storage tools. Several words are used to define these tools: "repositories" or more precisely "electronic knowledge repositories" (EKR), but also "Knowledge management systems" (KMS) or "Information retrieval systems" (IR systems), "information system". They all have the same vocation: the organized and collective archiving of knowledge (Arazy & Woo, 2007; Bock et al., 2005; Hayes, 2011; Hwang et al., 2018; Kankanhalli et al., 2005; Kim et al., 2016; Sutanto et al., 2018). The quality of archiving is essential to facilitate the recovery of knowledge. Storage tools allow better accessibility to the company's knowledge and thus participate in the capitalization process.

The knowledge exchange has been and is made ever faster, easier and more efficient thanks to information and communication technologies. These tools include emails and instant messaging, which allow information or knowledge to be exchanged from a request (Connelly et al., 2012). Failing to provide only support for the exchange of information and/or knowledge, emails have undergone misuse: they are the subject of information storage. According to a Lecko study (Rayole et al., 2016), they are considered to be the capital application of the entire information system. However, this diversion of use highlights the problems of validation and updating of the knowledge exchanged and stored via messaging.

The transition to collaborative tools was made in particular with the advent of wikis, a tool where individuals contribute and whose content can be corrected and improved by other members of the organization (Hayes, 2011). With these tools, individuals can interact with content, establish new networks for exchange and new communication channels within the organization (Hayes, 2011). Content storage tools can support the knowledge capitalization process by favouring content sharing. However, they don't play on tacit/explicit interaction, which is left to individuals. Thus, collaborative tools aim to favour this interaction by allowing individuals to exchange.

3.2 Enterprise Social Networking, Knowledge Management Tools?

Enterprise Social Networking (ESN) technologies distinguish from previous KM tools by their plural characteristics but also by their social aspect based on

collaboration. They offer the best combination of different types of tools: allowing both storage (capitalization process) and encouraging (more) interactions by supporting social ties (knowledge sharing and creation process?).

3.2.1 ESN Technologies: Technical Specifications

The technology of ESN tools is part of the wave 2.0. It is defined as applications facilitating interactive information sharing, interoperability and collaboration on the Internet (O'reilly, 2005). We notice then that this definition is more focused on the participation of the actors of the system than on technology, which highlights the need to use these ESN technologies as tools allowing and promoting social exchanges rather than as storage platforms. The link between KM and Web 2.0 can therefore be seen as the path from autonomous process systems to networks and collaboration (Hayes, 2011).

Web 2.0 carries the benefits of Web 1.0, that is, a platform for documents, plus the social Web. It is the activities of systems, due to the socialization of the Web, that generate new data, which in turn process and reuse in other areas (O'Reilly & Battelle, 2009). This creates an exponential increase in the number of data, what we call Big Data. Interaction and information overload are, so, familiar elements of Web 2.0.

3.2.2 ESN Technologies: Special Features

Web 2.0 is also intended to "simplify" use in order to improve interactivity on the web. Interactivity is promoted by the possibility of commenting, liking and "tagging" documents. The ESN technologies include gamification features which aim to motivate, by using different types - especially hedonic ones (Aboelmaged, 2018) - the users to participate on the platform. An ESN is open to everyone, so it gives visibility to the person behind the content (Aboelmaged, 2018). This effervescence of opinions, information and comments contributes both to the enrichment of content and to information overload. ESN tools seem also to encourage trust in a collective way, compared to previous tools which were favouring dyadic trust, so integrating the notion of a "system" (Singh et al., 2018). Thereby, and because ESN tools seem to enable users to "make sense" and to access their virtual colleagues' expertise (Aboelmaged, 2018), we then could expect that ESN tools ties CoP within the organization.

In these terms, ESN tools raises the question of establishing a governance adapted to this type of KM

tool, in order to preserve knowledge and keep fluidity to enable organizational knowledge creation.

4 METHODOLOGY

4.1 Context

4.1.1 General Presentation of the Company Travel-A

This research is carried out within the framework of a CIFRE (an industrial agreement for training through research in France) PhD thesis within a company evolving in the travel industry, which we will name Travel- α for confidentiality reasons. It is one of the world leaders in travel management. Travel- α is a global company with various regional management offices spread over several continents: Americas (NORAM and LATAM), Europe (EMEA), Asia-Pacific (APAC). During 2016, the company initiated a change in its strategy based on a digital transformation.

The company Travel- α is divided into eight major organizational functions, three of which are directly linked to the KM: the "Strategy and Commerce" function of which the KM team is a part, the "Human Resources" function and finally the "Clients".

4.1.2 Presentation of the Company's KM Project

The company's KM strategy is to support the company strategy of Travel- α while assisting its employees in digital knowledge sharing and creation via an ESN tool, JIVE (commercial software). Travel- α used several content management platforms, mainly an intranet and SharePoint. The current KM project is to gather most of this SharePoint content on JIVE. The goal is to allow employees to share, exchange, communicate and collaborate as freely as possible.

The objective of implementing this new tool is threefold: (1) share information relating to human resources and HR processes, i.e. the intranet, (2) manage knowledge relevant to customer relations and (3) organize and encourage interactions via the emergence of collaborative groups between Travel- α employees. The last two objectives are managed by the KM function; the study therefore focuses on these two.

4.1.3 KM Tools at Travel-A

At Travel- α , a large part of the content intended for

customers is stored and shared on SharePoint, a content management tool. A SharePoint site has been opened to everyone and serves as a knowledge base for documents intended for Customer teams. This site is managed by the KM team which, as a last step, validates and publishes the documents. We will call this knowledge base SPS - SharePoint System.

In connection with the company's digital transformation strategy, JIVE was launched in early 2017. JIVE is an American company created in 2001 offering its main product: a social network type technology available in SaaS. The solution works on the basis of "prefabricated" collaboration models providing tools for different uses such as innovation, project management, or even intelligence communities (Rayrole et al., 2016).

JIVE first goals were to replace the existing intranet tool and the old social network of the company Yammer. It was also chosen to avoid silos and procedures that slowed down employees' work.

Finally, JIVE's mission is to become the main tool supporting the KM system in order to facilitate the exchange of knowledge between employees and company learning.

4.2 Integrative Design Methodology

In order to carry out this research, we have adopted a design methodology well suited to intervention research where the researcher-actor aims to design and then implement a tool or an organizational device. We have developed an integrative design methodology (Pascal et al., 2013) which combines two methodologies: "science-based design" and "human centred -design".

The integrative approach thus combines the knowledge of literature based on "science-based design" approach (development of design rules by mobilizing existing knowledge in the scientific literature) and then tested in practice ; it creates knowledge by the combination of literature and real-life testing (Denyer et al., 2008; Romme & Endenburg, 2006; Romme, 2003; Van Aken, 2005) and the knowledge of practitioners based on "human centred -design" approach (successful solutions emerge from design processes involving users and future users and analysis of their needs) (Bate & Robert, 2007; Hatchuel et al., 2006; Plsek et al., 2007). The design rules from the literature, once implemented, can be tested and a new design loop can be developed. Thus, this methodology is carried out in several loops, each consisting of six stages: understanding the problem, developing design rules, creating usage scenarios, building the artefact,

evaluation and transformation (Pascal et al., 2013).

4.3 Implementation of the Methodology

The implementation of this methodology began in the Travel- α company with two Design loops carried out on 20 groups.

4.3.1 Design Loops

The first loop started early 2018, with meetings, survey and interviews, then implementation of the 3 first pilot JIVE groups in September, October and November 2018. While the implementation of these groups gave us some first results, we decided to start implementing second loop groups in February 2019. The second loop overlapped slightly the first one. The last groups of loop-2 were implemented end of Q4 2019, while loop-3 was being started.

4.3.2 Data Collection and Analysis Loop 1

Data collection for the first loop was done through two surveys conducted one year apart and interviews. The surveys were online (multiple choice questions and open questions) and sent to all Travel- α departments. The first in 2017, a few months after the launch of the ESN, aimed to highlight the uses of the company's various KM tools, and more specifically of the SharePoint and JIVE platforms (more than 400 responses collected); the second in 2018 wanted to identify changes in use after one year.

The first survey was followed by semi-structured interviews with a selection of users in the "Client" function, first KM team audience: Program Managers (PM), Sales and Global Commercial Operator (GCO). 54 interviews were conducted over 5 weeks, 30 minutes each, in order to identify: (1) the most sought-after documents and information; (2) the different platforms/tools employees use to find them (if they are found?); (3) the procedures used to search: keywords in the search engine or navigation through content map; (4) the new uses developed on JIVE and a comparison with those developed on SharePoint (previous tool for the storage and exchange of knowledge).

In addition, meetings were held with the heads of key departments in different functions in order to better understand the role of knowledge management with regards to the new company strategy implemented by Travel- α .

The main objective of analysing data from surveys, interviews and meetings was to define the

problem to be solved, the first step in the design loop. Surveys and interviews have highlighted the concrete needs and problems encountered by users when searching for documents. The meetings specified the needs and expectations in terms of the KM strategy.

4.3.3 Data Collection and Analysis Loop 2

For the second loop, a third survey (500 responses collected) has been followed by interviews (25, 30 minutes each). The objectives of these interviews were to better understand (1) how users learn about the new Travel- α strategy, (2) for what purpose they go on JIVE, (3) what kind of content and knowledge they are looking for and if they find, (4) how they proceed to look, (5) what issues they encounter and finally (6) what they expect from JIVE in the future. In addition to this, information from 180 meetings conducted with group owners have been collected and coded.

5 RESULTS

5.1 Problem Awareness

The first analysis of meetings and interviews allowed us to define problems at two levels: strategic and operational. At the strategic level, expectations were (1) to organize knowledge in alignment with the new strategy and (2) to use JIVE to create a KM system. At the operational level, get one platform to store knowledge and content, was the most requested element, JIVE replies to this. But the change from a very centralized platform to a decentralized one was one of the main operational challenges KM team has to solve. The second operational challenge was to manage the transition from SharePoint to JIVE in order to get more collaboration for a richer sharing.

5.2 Design Rules

The literature in interaction with surveys and interviews has allowed us to define six main design principles in two loops. These principles in interaction with the groups' members were then broken down into Design rules. This step therefore mixes steps 2 (design rules) and 3 (usage scenario).

5.2.1 Distinguish between Official Groups and Collaborative Groups

The dual purpose of the knowledge management system led us to build the KM solution by combining

two types and two groups. Official KM groups that aim to support the capitalization of knowledge through the exchange and sharing of knowledge deemed relevant, validated and updated. Collaborative groups which aim to strengthen exchanges and the combination of knowledge in order to promote knowledge creation.

Rule 1: Official groups are responsible for identifying critical knowledge, formalizing, validating, classifying, and updating it. These essential processes to guarantee confidence in the published knowledge (perceived usefulness) and the ability to retrieve the right document (ease of use) requires the implementation of minimal governance.

Rule 2: In addition to official groups, encourage the emergence of collaborative groups in order to strengthen interactions within these. Their objective is to increase the exchanges and combinations of knowledge not yet stabilized in order to allow the emergence of new knowledge.

5.2.2 Provide Official Groups with a Common Identity

The move from a single site, SPS, to a multitude of groups on JIVE reflects a major change in the KM system. The recognition of official groups, depositaries of validated knowledge then becomes essential.

Rule 3: Having a design element that allows their recognition, here "official" will be written in each group's name.

Rule 4: Provide official groups with a common identity to facilitate exchanges and knowledge sharing through these groups. This identity can be based on the search for similarity (Brewer, 1991). The similarities are declined on two levels: 1) the respect of the colours and the logos of the company, and 2) a common model of the home page. The common model ensures a similarity between the groups, it nevertheless allows adaptations so that each group can appropriate it. The common model is made up of 4 mandatory "boxes" on the homepage: a box for describing the group's subject, a box for presenting the team in charge of the group, a box leading to the education group, a box leading to a "frequently asked questions" page.

5.2.3 Have a Common Knowledge Classification to Facilitate Their Retrieval

The knowledge retrieval, essential for a KM-IS, is based on a shared knowledge classification and an indexing adapted to usages and the system. The mode

of classification or organization of knowledge is essential to promote cognitive alignment between members of the organization (Nonaka, 1994); that is, all the more, important in a KM system composed of several distinct groups. Content is generally indexed by the name of the document and then by the description of the content and the container (Arazy & Woo, 2007; Kergosien et al., 2011).

Field surveys have also shown that the current classification and indexing methods are not satisfactory on SPS, revealing problems with retrieving documents via search engine or navigation. Going to JIVE is an opportunity to improve this key point of the knowledge management system.

Rule 5: Adopt a common document indexing policy to facilitate document retrieval via search engine: a naming convention (with a glossary to maintain spelling consistency) and a tag convention (made possible as JIVE is an ESN) to improve search engine's results.

Rule 6: Adopt a common knowledge organization to facilitate documents retrieval via navigation. The categories to organize are taken from the glossary developed in the naming convention. In addition, navigation is made easier by the construction of a page (a "content overview document") mapping the types of documents and the link to documents published by the group. Surveys have shown that this mapping of published documents is particularly appreciated by users.

5.2.4 Get a Governance

The literature in KM indicates the need to set up an organizational structure which supports KM processes, in particular the capitalization process and support processes such as communication and incentives. Mainly, studies on the KM-IS governance concern conventional tools of the "repository" type. However, an ESN profoundly changes the nature of the KM system. It is no longer made up of one site but of several groups, and these group's leaders are not part of the KM team.

The mode of governance to be put in place is to find a fair balance between centralization and decentralization. For this, during the first loop we have created a rule to guarantee the quality of capitalization in official groups.

Rule 7: Develop a RASI for each official KM group. The RASI (or RACI) consists of the development of a table, in which the roles and responsibilities are clearly indicated.

As you will see later in this article (evaluation section), we encountered difficulties to put in place

this rule and the loop 2 highlighted a need of a wider governance, not only on officials' group. As is, the rule 7 has been transformed in a more informal one (rule 7A) where KM team is aware of who is an official group administrator and so 1) follow publication guidance (to help knowledge retrieval) and 2) reply to questions on the group they own (more information in evaluation section). This was to meet the need of role and responsibilities in official groups, but we were lacking a rule for a wider governance.

From the literature, we learnt a KM committee is useful to provide awareness of KM within the organization and to define KM priorities based on the strategy.

Rule 9: Implement a KM committee within Travel- α with key stakeholders at manager level.

5.2.5 Encourage Interactions between Formal Groups and Collaborative Groups to Support a Dynamic Knowledge Management System

The choice of JIVE is to encourage interactions between collaborators in order to facilitate exchanges and combinations of knowledge, as a social network would do (Nahapiet & Ghoshal, 1998). In this perspective, employees can create collaborative groups (rule 2). If these groups are aimed at creating new knowledge, it is important once knowledge is stabilized to share it more widely. The official groups then take over to ensure the sharing of this new knowledge once it is deemed relevant and validated.

Rule 8: Organize modes of interaction between official and collaborative groups.

5.2.6 Use the Tool's Functionality to Motivate Knowledge Sharing

ESN tools offer new functionalities, notably gamification with quests and earning points by participation on the platform. We have seen during the JIVE's first year that individuals were motivated to use it by the perspective of earning points. Also, many first contributors on the platform made the request to create quests. Martín Cruz et al. in 2009 (Martín Cruz et al., 2009), hypothesized that extrinsic motivators play on competition between members, since they encourage employees to perform useful and valuable tasks for the organization. The authors specified that despite the fact that extrinsic motivators are not necessarily the first motivators, they can be a good tool to generate a "basic commitment". Our observation allows us to conclude that the gamification has played this role. Thus, putting in

place some rules about the gamification should improve motivation to share knowledge on the platform.

During loop 2, and faced with feedback from users, the KM team, in collaboration with the Internal Communication team (in charge of JIVE), decided to add rules on Quest creation, so that these make more sense in knowledge sharing for users.

Rule 10: Regulate the quests of official KM groups: (1) KM team should be included in the quest discussions, and (2) quest objectives and end date are required.

5.3 Artefact Construction

As explained briefly above, the methodology of Design Science lives by loops. The first loop, rules creation, was applied on three pilot groups (PO, TC and GSS) in the last quarter of 2018. All three pilots have applied the rules. However, the application of the naming rules (rules 5 and 6) revealed points of tension in one group (GSS).

The second loop has been applied on 14 products/services and strategy groups and 8 other groups related to sales or CX team productions, during 2019. We encountered again these naming tension, but more groups were implemented less, these problems appeared. During this loop, we did not apply any rule 8 because no collaboration groups have been created. This second loop has highlighted a wider problem: the need of organizational KM governance in Travel- α .

5.4 Evaluation

The two first Design loops allowed us to highlight 4 key points relating to the construction of a KM system on an ESN, which will be very briefly described.

5.4.1 Richer Exchanges

The main advantage of Web 2.0 tools is the collaborative features included, more specifically likes, comments or questions in ESN tools.

Richer Exchanges in Terms of Knowledge.

Through comments, in particular, users can tell others if the published content is useful, interact with contributors. Users can also ask for more information through comments and/or questions. The example below shows us that a response in a comment can help the user to apply an official document rule to a particular case. Contextualization is done by people

who face same situations and share it, as explained by PM-1 in EMEA.

“The question was whether we could put the invoices on [a travel-a product] I raised the question in comment, and I had the answer”

These ESN features extend exchanges with many potential partners and not only with the people who own the content. Below, the combined advantage of (1) the commenting feature and (2) the platform’s openness to everyone, enables greater responsiveness because it is not only content owners who can respond, other users can too, as PM-2 in NORAM said:

“One thing I really like is that when you post [a question], you don't hear the owner of the product right away, but you hear other PMs or other people who could answer it”

However, sometimes, users’ comment does not add value, as Sales 1 in APAC said:

“A lot of people commenting, it's irrelevant”

Richer Social Exchanges. The primary purpose of an ESN tool is to create virtually the interactions characteristic of social networks, making it possible to connect individuals who are not directly connected with other individuals. These tools appear to be so far fulfilling well this function of "connectivity" as presented by Sales 2 in EMEA:

“Overall, I think it's a very good tool: the possibility of being able to interact with people is an ergonomic tool”

We identified two types of social relationships: the first is related to motivation; the second reflects the multiplication of connections to gain access to knowledge.

Motivational Social Bond. These functionalities of virtually recreating social relationships make it possible to recover some social interactions that individuals could have face to face, in particular congratulations, encouragements, as explained by PM-3 in NORAM:

“If somebody need encouragement, I would definitely encourage them”

The tool is also used to share the achievements and successes of the teams, as explained by PM-4 in NORAM:

“It is also a great place for staying connected [...] we have a page where we can share accomplishment”

Social Ties to Access Knowledge. On JIVE, whatever content type you publish, your name appears; unlike common social networks, pseudonyms are not possible. Thus, all users know who posted what. Users can know "who knows what" (who owns what), as the GCO in EMEA explained:

“It is very easy to know who the product owner is, [...], who can be helpful. So, it is an easy access information and exchange platform”

5.4.2 A Facilitated Motivation: The Gamification

ESN tools have gaming features allowing individuals to earn points by participating. We can distinguish two gamification types: first, the more you participate the more you earn points; second, following a "quest" allow you to gain points.

Points. Whether it is a like, or a comment, or even a document, each participation gives points to the users. This simple fact is a motivator for individuals who are thus encouraged to use it, as explained by PM-3 in NORAM:

“When I have a little time or depending on the page, when I see my profile, I see that I am so close to the next level so I will pick a quest or I'll do something to pump up my points”

Here, we can see that users are encouraged to "participate" on the platform to earn points and that this incentive phenomenon works. The gamification aspect turns out to be a good motivator for use.

However, gaining points by participation can generate perverse effects, even if users are concerned about the usefulness of their interventions as PM-3 in NORAM:

“I try to comment but I like my comment to be a value, I don't comment just for comment I would really comment if my words would be impactful. [...] I don't want to

*be the girl that comment
"great job everyone" every
single time"*

As the quote above points out to us, the number of people commenting "great job" every single time is significant enough for her to mention it.

Quests. Creating a "quest" creates a "path" that the user will have to take to earn points. This "path" will make him "consume" different content, in different ways: by liking, commenting, "sharing" or downloading content. By encouraging people to do so, the quest can have a positive impact on the knowledge dynamics.

(1) The individual is browsing content that he or she might not have seen without the existence of the quest. Insofar, as the quest can be related to the individuals' tasks, it highlights important content for him or her and, thus, favour its consultation as a priority, as PM-4 in NORAM explained:

*"There are some products
that I really do need, and I
want to know about, so I would
do that quest"*

Targeting key documents is a way of countering "information overload" which is often cited by users and the literature of Web 2.0 tools. PM-4 in NORAM continues:

*"And I think this is going to
take me to the right places,
make me bookmark the right
pages"*

(2) These "quests" allow also managers to track people who completed quests; offering a new form of training for employees as explained by PM-5 in NORAM.

*"We had to complete the
[JIVE quest]: we have to go
through [JIVE], the learning
training thing by August 12.
That's really good because
when we see that there is a
deadline, in my opinion, it
forces me to bloc my calendar,
take the time and go through it.
And it is very [...], easy to
follow"*

Thus, the marketing manager of the new strategy created a quest to encourage individuals to consume the new strategy content and incorporated this quest into training for newcomers.

If you want to complete the quest, you must

complete all of the actions listed. It's a "forced" way to share knowledge. However, quests may sometimes not make sense to users. Content owners can create quests which, at the end, make no sense for users, as PM-4 in NORAM explained:

*"Some of the quests want
you to share a page or a
document. I don't really
understand that when we all
have access to the same quest.
I am like "who am I going to
share this with?". People have
all the same access that I have.
[...] That's not really working,
I'm like "why are we doing
this?"*

It seems here that the hedonic motivation does not activate when there is loss of meaning. As a reminder, ESN should allow the re-creation of social ties, which partly consist of common meanings, particularly within CoP. In the example above, the person sought to share with his/her community to bring value and help others. This example shows that a poorly designed quest can create information overload.

5.4.3 Knowledge Creation

The distinction between official and collaborative groups (rules 1 and 2), and how their interaction can favour a dynamic KM system (rule 8) was put in place by GSS in the loop 1. GSS owners noted that the interactions between the official and the collaborative group allowed them to question critical knowledge. As stated by the GSS' Vice-President:

*"What the GSS group has
set up is exactly where we want
to go to manage knowledge"*

Unfortunately, the collaborative group has not been animated and was moved out of priorities. So, we cannot confirm or infirm the results. With the second loop, we tried to implement collaborative groups with official ones, as one of the group owners said:

*"that's ok, we are already
collaborating using mails and
calls"*

This example shows that we need users and managers' awareness about knowledge creation to get dynamics in the KM system.

Governance. As explained briefly in the Design rules section, we started by creating the rule 7 in order to make roles and responsibilities clear for everyone, especially the users. When we asked the pilot groups

of loops 1 to fill in the RASI, the group owners did not see the need of this particular element. According to the PO owner:

“It is not my priority and [the RASI] may change every often”

So, implementing the RASI was difficult, that’s the reason why we made it more informal between KM team and owners. But with the number of implemented groups increasing, we saw less and less difficulties to implement all the common rules and moreover, other group owners came to KM team to implement KM rules. Here, we can see that the governance largely promotes the knowledge sharing.

5.5 Transformation and Changes for the Coming Loop

To synthesize: the first loop (3 groups) has shown the needs of a better role & responsibilities definition within the different groups, but also a definition of knowledge groups boundaries. The second loop has shown the need of a wider governance due to the interdependencies between groups not reflected by the governance in place. We thus need to expand the groups governance to a KM system’s governance, which implies the involvement of all employees in a KM culture.

The next loop should focus then on engaging employees in a federal KM governance by creating a KM committee in order to spread the KM culture, but also to get feedback from key stakeholders in terms of priorities and usage.

6 DISCUSSION AND CONCLUSION

This paper aimed to show the first results of the ESN tool implementation to build a dynamic KM system that promotes essentially knowledge sharing. Indeed, the results obtained have shown that the deployment of this technology definitely improved knowledge sharing processes. But it can generate vicious circles and needs specific governance, especially at the implementation stage, for the KM system to be efficient.

6.1 Exchanges Favoured, Knowledge Sharing Improved

We have seen that JIVE can, via likes, comments and questions, enrich the initial content of documents.

The interactions, facilitated by technology, between group members and the published content, provide additional knowledge. Here, interactions between formal (“official” knowledge) and less formal ones (comments) initiate a virtuous circle of knowledge exchange. These interactions between two forms of explicit knowledge enrich the notion of virtuous circle introduced by Nonaka (Ikujiro Nonaka, 1994) which is based on tacit/explicit knowledge interactions.

In addition, we have seen that comments and questions (less formal knowledge) on an ESN tool can provide context that helps knowledge appropriation, and thus knowledge sharing. It echoes Echajari and Thomas’ (Echajari & Thomas, 2015) work on codification, abstraction and appropriation.

Our results show that ESN tools favour two types of social exchanges. The first type allows users to access their colleagues’ expertise (Aboelmaged, 2018), by identifying “who knows what” in a larger way than the one offered by their direct network.

The second one favours social interactions such as encouragements, which as shown by the literature (Ikujiro Nonaka & von Krogh, 2009; Singh et al., 2018; Wenger, 1998), facilitate knowledge sharing.

6.2 Gamification and the Risk of Developing a Vicious Circle

Gamification on ESN tools encourages users to actively participate in the KM processes and help to access the right information. It contributes to organizational learning. Knowledge sharing seem to be more influenced by hedonic motivation on ESN tools, and gamification is a good example as by providing direct positive emotions after gaining points, it motivates to share (Aboelmaged, 2018).

However, motivation on KM system has always been tricky (Garud & Kumaraswamy, 2005; Jasimuddin & Zhang, 2011) and to some extent, the incentive via gamification joins Garud and Kumaraswamy (2005) work highlighting the dangers of financial incentives. Indeed, it can create information overload and reduce knowledge quality on the system. Gamification is all the more dangerous since this practice is very simple to implement. They therefore need to be regulated by the KM governance system.

6.3 Federative and Collaborative Governance Difficult to Implement

ESN tools aim to manage knowledge by promoting interactions through a social network construction.

However, the study shows that these ESN require a KM governance implementation at different levels: First, to ensure KM processes' quality, as for a classic KM IS, managed by official groups; second, to motivate people to use the tool and also to regulate interactions. Beyond these regulations, governance appears essential to create a unique KM system which makes sense (Garud & Kumaraswamy, 2005). The literature speaks of federative governance (Choi et al., 2005; Kannabiran & Pandyan, 2010) and in our case, KM governance is difficult to set up due to the creation of a KM system common identity. The ability to identify arises from the convergence of an individual's interests with the system ones (Johnson et al., 1999). Identity and governance seem intrinsically linked, which provides an interesting avenue of research for future design loops.

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