The Use of Enterprise Social Networks for Knowledge Sharing: SHIFT, the CEMEX Case

Abstract

Enterprise social network sites (ESNSs) have been introduced into large multinational organizations with the expectation to create value for all the stakeholders (industry, organization, teams and members). The objective of this paper is to better understand how to design and support knowledge sharing practices of collective networks to mobilize global initiatives. Value in networks has long been known to be at least partially a function of the number of nodes attached to the network (e.g., Metcalfe's Law). However, these views of value are incomplete with respect to the kind of interactions taking place on social media networks. When Metcalfe theorized his function, he visualized a network that carried a particular kind of message. However, with the emergence of social networking, the same social network platform can carry a number of kinds of messages, from information updates, to game play, to fundraising, etc. To understand how knowledge sharing takes places a research model is presented and a case study is documented, based on Shift, the CEMEX platform for collaboration through consideration of social capital dynamics, support for relationships and network interactions. Finally, a business case was proposed with an assessment on economic, pragmatic and social dimensions when the ESN was institutionalized and adopted.

Keywords: Institutionalization of Enterprise Social Networks, Enterprise Social Network Adoption, Sustainable Value Creation

Introduction

Organizations today are increasingly distributed and networked, making it more challenging to share knowledge across time and space (Cross, Parker, Prusak, and Borgatti, 2001). Indeed, many large organizations today are turning to networked forms of organizing as a key

organizational structure and relying on technology to facilitate coordination and support interdependent groups (Espinosa, Slaughter, Kraut, and Herbsleb, 2007).

In particular, multinational organizations are turning to virtual teams and distributed work arrangements in order to coordinate and enable knowledge flow; however, team members face challenges identifying experts in distant parts of the organization (Zammuto et al., 2007), developing trusting relationships that encourage information sharing (Gibson and Gibbs, 2006), and sharing knowledge that is situated in local contexts and often taken for granted. Employees working in distributed arrangements must negotiate the tensions associated with working across geographic and other structural boundaries (Gibbs, 2009). Enterprise social networks (ESN) can help address these challenges because they provide platforms that enable large-scale knowledge sharing.

Literature Review

Large, distributed multinational companies (MNC) have led the adoption of enterprise social network technology. Large MNC are increasingly dependent on successful knowledge sharing among individuals, teams, and units because of their high degree of geographical dispersion across locations and time zones. Knowledge sharing may range from one on one exchanges of information between individuals (Cummings, 2004), to ongoing problem solving and coordination in formal project teams (Tsai, 2001).

Koch, Leidner and Gonzalez (2013) articulate three key features in their bounded definition of social network sites: "A social network site is a networked communication platform in which participants (1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-provided data; (2) can publicly articulate connections that can be viewed by others; and (3) can consume, produce, and interact with streams of user-generated content provided by their connections on the site". These technical characteristics

shape the interactions on these sites, in conjunction with user goals, perceptions, and other social factors, and provide a basis for understanding these tools in the context of organizations. Large MNC are increasingly adopting ESN platforms such as Shift, Yammer, Ning, Jive, or Telligent; enterprise social media tools like these may benefit organizational processes because they enable individuals to engage in "sense-making" about other employees (DiMicco, Geyer, Millen, Dugan, and Brownholtz, 2009), provide access to new people and expertise, and increase awareness and contact among virtual employees (DiMicco and Millen, 2007). However, some empirical work on social media in the organization suggests that these tools are primarily used to connect with customers and other external stakeholders, and engage in professional networking. Less work has examined social media (and specifically ESNs) for internal communication among team members and others in the organization. ESNs provide new affordances that can be helpful for broad distribution of information and knowledge, but we believe they are especially powerful because they situate this content within a social context, where individuals' network and identity information is shared.

The main differences between social networks and enterprise social networks (see Table1).

Table1. Main differences between Social Networks and
Enterprise Social Networks (Koch, Leidner, and Gonzalez, 2013)

Dimensions	Social Networks	Enterprise Social Networks
Behavior	Influenced by site norms, which may be understood differently across users	Influenced by an explicit set of company user guidelines and/or by informal team or organizational norms
Users	Any individual who creates an account and agrees to the site's terms of service and other policies	Employees of an organization; use can be optional, encouraged, or mandated
Design	Generally controlled by a parent corporation, but designed to encourage interaction between individual users	Generally controlled by stakeholders within the organization, but designed to encourage interaction among individual, teams, and other units or global networks
Audience	Can be global, limited to one's entire "Friend" network, or targeted to subsets of one's articulated network	Configured by user or possibly organizational structure (work team, department, division, or global initiative community)
Goals for Use	Primarily used for social/interpersonal goals, such as building social capital, networking, maintaining social or business relationships, and entertainment	Primarily used to accomplish work-related goals, such as knowledge sharing and forming or maintaining connections with professional contacts

Social media use both shapes, and is shaped by, social processes, which also affect the ways in which information flows through organizational networks. Below, a description of four factors that are important considerations when examining ESNs and their role in the knowledge-sharing process. Specifically, ESNs can constrain, enable, and reshape (1) social capital dynamics that coordinate how and to what end individuals mobilize informational and social support resources embedded within their social networks, (2) the way in which social relationships are encouraged through the sharing of identity information within organizational contexts, (3) the context collapse that can accompany diverse networks, and (4) knowledge sharing, particularly in the context of networked organizational structures that drive many large organizations.

Social capital describes resources embedded in social relationships and interactions within a network (Lin, 2001). Social media have been found to be especially well-suited for bridging social capital, which speaks to the benefits associated with weaker, more heterogeneous social ties such as novel information and broadened world-views.

Social relationships in a community allowed individuals who are physically distributed throughout the organization, to share diverse perspectives and new information that constitute bridging social capital and are useful for knowledge-sharing across clusters in a network. Additionally, individuals may be more likely to contribute content to a site that has social gratifications, compared to a traditional company directory (DiMicco et al., 2009). Identity information may help members of distributed organizations more quickly locate experts in a particular area, and the inclusion of personal information may make the interaction less artificial and help individuals find common ground, making it more productive as well.

Context collapse describes the possible complications associated with online self-presentation and identity management in online contexts (Koch, Leider and Gonzalez, 2013). Some online contexts often do not allow for differentiated self-presentation but rather collapse contexts by

flattening various connections representing different aspects of one's identity into an one-dimensional group such as "Friends" or "Contacts." In offline contexts, we typically interact with a specific set of people in one particular place or occasion, which enables self-presentation specific to that context. Organizational members must also negotiate self-presentation to different professional audiences such as managers versus peers, colleagues versus clients or business partners, and members of various organizational units and job functions.

Knowledge sharing is being foster in MNC leveraged by technology to facilitate information exchange, and to provide individuals within the organizations a channel through which connections to others are formed. Knowledge sharing is critical to innovation and collaboration: knowledge must be able to be shared across contexts through networks and members must have confidence in the value of that knowledge for achieving the team's objectives (Espinosa, Slaughter, Kraut, and Herbsleb, 2007).

In summary, ESNs provide platforms that aid in the distribution of information and the sharing of knowledge at the individual and organizational level. Importantly, ESNs support the socialization and interpersonal interaction that provides a foundation for many knowledge sharing processes. While much of the literature on knowledge sharing has emphasized the task related dimensions. This paper has highlighted the value of an integrated approach to knowledge sharing in modern organizations that considers both social and task dimensions (Espinosa, Slaughter, Kraut, and Herbsleb, 2007).

Objectives

The objectives of this paper are (1) to better understand how to design and support knowledge sharing practices of collective networks to mobilize global initiatives; (2) to identify the sustainable value creation for a company when institutionalizing and implementing ESN; and (3) to propose an assessment of a business case for a MNC when institutionalization and implementation of a ESN took place.

Methodology

Based on the findings in the literature review the following research model is proposed for analyzing the adoption of ESN and knowledge mobilization and their effect on business value creation (see Figure 1). The model answered the research question: How to assess the business case when large multinational companies adopted ESN?
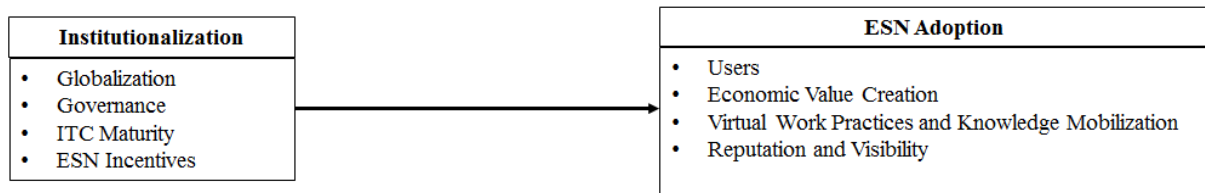

Institutionalization
- Globalization
- Governance
- ITC Maturity
- ESN Incentives

ESN Adoption
- Users
- Economic Value Creation
- Virtual Work Practices and Knowledge Mobilization
- Reputation and Visibility

Figure1. Enterprise Social Network Adoption (Author, 2016)

Proposition1 (P1): Institutionalization of Global Networks will positively influence ESN Adoption

P1a: Globalization of large MNC will positively influence ESN adoption based on the number of users

P1b: Governance of large MNC will positively influence ESN adoption based knowledge mobilization

P1c: ITC Maturity in large MNC will positively influence ESN adoption based on virtual work practices and knowledge mobilization

P1d: ESN incentives in MNC will positively influence ESN adoption based on reputation and visibility

As defined by Cooper and Schindler (2006) explorative studies tend "toward loose structures with the objective of discovering future tasks". An explorative study is relevant when researchers pretend to develop concepts more clearly, establish priorities, develop operational definitions, and improve the final research design" (Cooper and Schindler, 2006). In this way, this paper provides the basis for the following "formal" study of ESN in the assessment of a business case, providing metrics for economic, pragmatic and social value.

This paper included a case study, which means that it was a context specific study that sought to investigate a previously established pattern (derived from theory) in relation to that of an empirical example, providing generalizable results (Yin, 1984).

This paper analyzed a single case study, and all the five Global Business Initiatives (44,000 members) and executives sharing Knowledge Mobilization and Virtual Work Practices (Playbooks) were interviewed by the author, and there was not interrater agreement to consider. All the selected participants had a unique experience within a specific field of expertise, as well as on overall issues concerning CEMEX' strategy, so it was therefore possible to cover all aspects of the research model. The unit of analysis was the global business initiatives (global networks). The rationale for considering a single case was that CEMEX-Shift represents a critical case in testing a well-formulated theory to determine whether the Globalization, Governance, ITC Maturity, and ESN incentives, and may represent a reference for other ESN with an innovative approach and profile.

According to Yin (1984) a case study is the best method for examining and seeking to understand in-depth, a newer and less explored phenomenon. Qualitative methods can be helpful in identifying and characterizing multifaceted organizational dynamics that can influence continuous innovations within a large multinational company.

Case Study

CEMEX, the Mexican cement producer and one of the world's largest manufacturers of building materials, is using an internal social network to connect its employees across 50 countries.

CEMEX launched its IBM Connections-based platform, SHIFT, in 2010. Since then the number of users has grown from 400 to comprise all their 44,000 employees. The number of communities soared from six to 2,400.

SHIFT was born when CEMEX's CEO Lorenzo Zambrano to explore ESN and how it would work for the company.

At the height of the economic crisis, the building materials industry was going through difficult times. That is when Zambrano understood that technology could give the company a competitive edge. He encouraged his employees to look at work in a different way, to break silos and to collaborate between operations and business units.

The innovation director, Mr. Gilberto García began testing different ESN technologies, including CISCO and Microsoft. He settled for IBM Connections. "This technology seemed more mature. It had the ability of offering integrated solutions. It went beyond wiki engines, blogs and document management."

García appreciated IBM Connections' ability to learn from external social networks and to transfer that experience into the enterprise. "SHIFT has a YouTube-like engine that enabled employees to upload videos. This was very important as some of them prefer sharing videos to writing blogs".

At the beginning of the project, CEMEX took care of linking its business strategy to that of SHIFT. This was, according to García, the key factor behind the value creation of the SHIFT as the ESN.

SHIFT was instrumental in supporting the company's five strategic Global Initiatives. One of these, for example, was aimed at replacing the use of carbon with fossil fuel in its operations. CEMEX leaded globally in this field and has won awards also thanks to the amount of collaboration made possible by its ESN.

SHIFT has also enabled research groups focused on concrete and insulation to develop three new global brands in just two years.

Work on SHIFT has been organized around the five Global Initiatives, which make up the core of CEMEX's business strategy.

Each Initiative began with structured governance (sponsors, mobilizers, initiative leader, and initiative members). The assigned Executive Leader was a senior executive with sufficient political weight and global visibility, and an Initiative Leader with operational knowledge and hands-on experience. Mr. García gave them guidance on how to develop the network and helping them get employees on board and drive traffic. For example, in the case of the Alternative Fuels and Biomass Initiative, plant operators were invited to join the community, take part in initiatives and share best practice.

García also encouraged employees to create spontaneous communities, which he calls Fertile Grounds. One of these was launched by a group in Germany that needed to share information on how to ship materials in a more efficient way. Colleagues from Latin America and the US joined in and created a highly participant knowledge-based community.

In Spain, a community that started at grass-root level ended up going viral. A group of electricians at a plant in the country wanted to collaborate and exchange ideas. They created a community on SHIFT that drew the attention of colleagues in Mexico and other parts of Latin America. They found the practice useful and decided to replicate the experience. Soon CEMEX electricians around the world decided to convert these communities at country level into a single global one. Another example is that of a laboratory in Switzerland that works on cements. They created a community on nanotechnology and their weekly blog has been attracting thousands of hits from all over the world.

Apart from communities, SHIFT offers employees other ways to access the company's knowledge. CEMEXpedia is a wiki-based repository with more than 700 articles that employees consult and edit regularly.

Instead of contacting colleagues and asking them for a meeting in which García demonstrated how to use SHIFT, he started by asking them about their collaboration needs. "I want to understand what they do and what their challenges are".

To promote adoption, the Innovation area used a wide network of evangelists. "We are a small team of ten people, seven in Mexico and three in Switzerland. We can't reach and on-board every single employee".

That was why active users, key adopters and champions were encouraged to get involved, spread the word and become an extension of the innovation team.

CEMEX believed in incentives and in rewarding employees for participating actively in the life of the platform. SHIFT had a system of badges that were generated automatically based on social analytics. "Before we introduced badges, we had to look at each single community and measure their level of engagement manually."

Employees could also receive Plus Cards in the form of digital certificates awarded to them for participating in training sessions or projects. Plus Cards became part of their identity on SHIFT and were displayed on their profile page for visibility based on performance.

Thank You Notes from the CEO were handed out through the system as a form of personal recognition to employees that generated exceptional value for the company.

According to García, "awards were about being recognized at global level". "SHIFT gave people the opportunity to showcase their experience to colleagues around the world, well beyond the local level at which they work".

CEMEX was working on a new version of the platform, SHIFT 3.0 that was introduced in 2014. This included new functionalities to help employees work socially on projects.

Results

Globalization and Users. CEMEX was a global building materials company that provided high quality products and reliable service to customers and communities around the world. CEMEX produced, distributed, and sold cement, ready-mix concrete, aggregates, and related building materials in more than 50 countries, and maintained trade relationships in approximately 106 nations (see Figure 2).

Global and Functional Networks (2015)
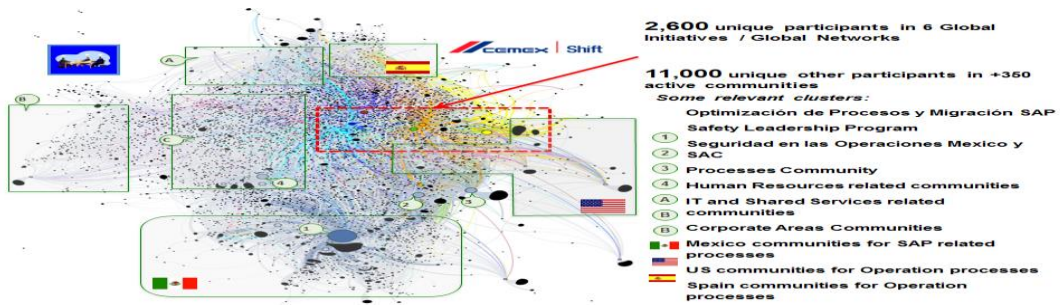
Sales Distribution by Sales (%) in 2015
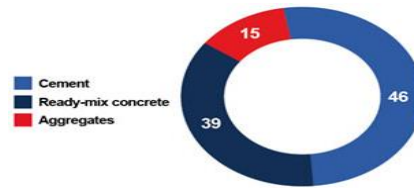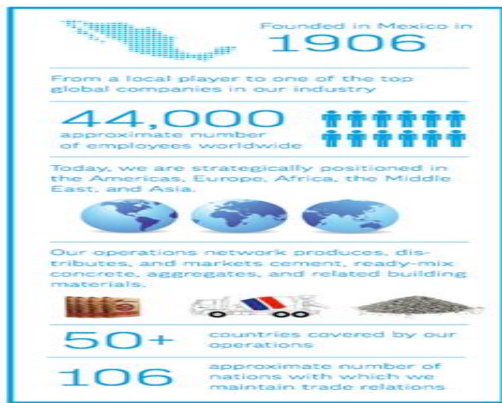
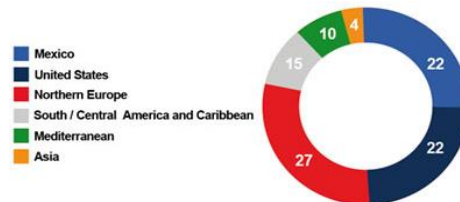Sales Distribution by Geography (%) in 2015

Figure2. Global Network Initiatives trigger by Globalization

The number of users went from 400 in 2010 to comprise 44,000 employees in 2015. The number of communities soared from six to 2,600 in the same period of time.

Governance and Economic Value Creation. Each global network had very structured governance: sponsor, executive leader, mobilizer, global track leader, a core team, a support group global coordinator and the members of the network (see Figure 3).
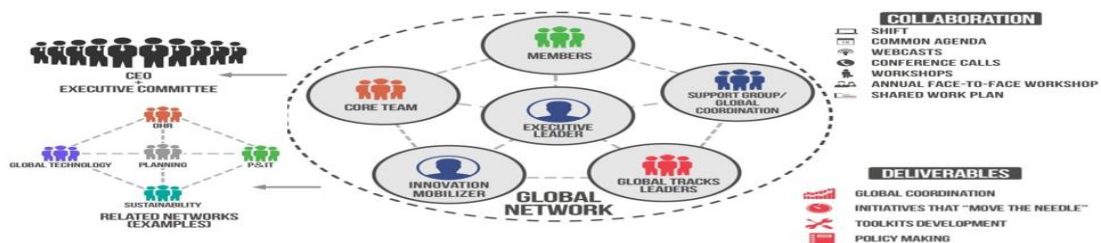

Figure3. Global Network Governance

ITC Maturity and Virtual Work Practices/Knowledge Mobilization.   The information technologies to leverage the ESN were comprehensive and at a 4 level of 5 so the maturity level was medium, with still a way to go in terms of organizing, integrating and measuring the business impact (see Figure4).
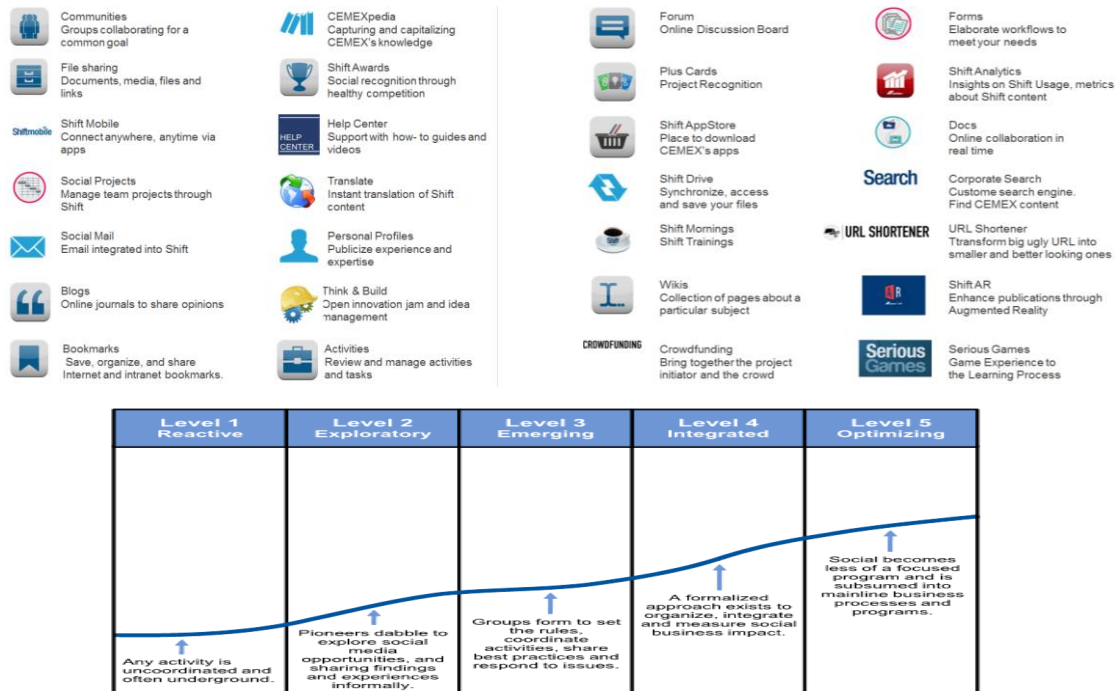

Figure4. ITC Maturity and Virtual Work Practices

ESN Incentives and Reputation/Visibility.   SHIFT recognized the collaboration and performance of the members in each network as well as the level of participation, performance, skills and competences acquired and applied to the business objectives.   The recognition provided visibility and reputation worldwide with badges and awards being posted in the members' profiles (see Figure5).
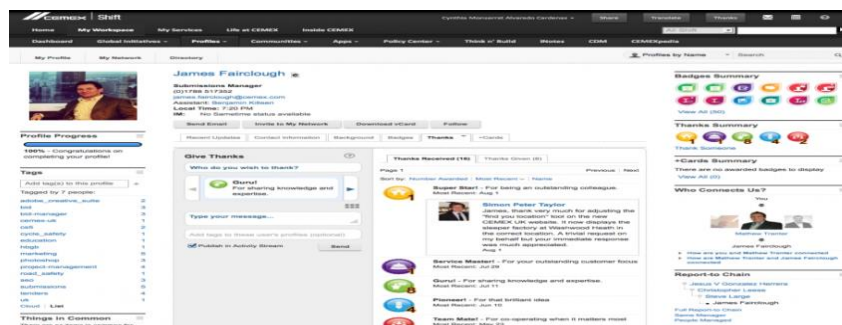

Figure5. ESN Incentives to motivate visibility, reputation and identity

Business Value Creation. SHIFT created value for CEMEX in two domains, economic and

pragmatic (best practices and knowledge mobilization) (see Table3).

Table3. Business Case to Asses Global Initiatives' Value Creation

Global Initiative	Economic Value	Pragmatic Value
Alternative Fuels	• Increase % of Alternative Fuels from 5% to 28 % in 7 years (Industry Leader) • Savings of 130M USD in 2012 • Avoided use of 2M Metric Tons of CO2 • Developed sustainable AF sourcing strategy • CAPEX project evaluation and prioritization 16 projects in 2013 with18,618MUSD assigned and executed 4,777MUSD • Global CEMFuel Award winner 2014 and 2015 • 14 alternative fuel projects are registered with the UNFCCC	• Shift Community • Benchmark Tools • Experts discussion forums • Collaborative CAPEX evaluation • Best practice videos • Weekly newsletters • Initiative Council meeting two times per year
Grow the Pie	• Developed marketing and commercial material for Pavements and Housing Solutions • Reached 315 concrete paving projects • LEED Certification Services Launch • Built a reference catalog of infrastructure projects • Residential housing strategy, and Housing Value Chain Analysis for certain solutions • Promoted Integral solutions internally (through workshops and training) and externally: Insulated Compacted Concrete, Blocks Building System, Roller Compacted Concrete, Pavement Systems	• Newsletters • Global marketing material available • Agenda of webcasts • Reference projects community • Annual Core Team Meeting and Workshop • Virtually Enabled by Shift
Ready Mix	• Developed and launched 3 global brands in record time (2 more in pipeline for 2014/2015) • Set a common language on Type of Products and KPIs. • Increased value added products from 8.5% in 2006 to 33% of total ready mix sales in 2015 • Defined a global ready mix pricing strategy with potential to increase income by implementing surcharges, service fees and full freight recapture • Agreed on a global price management framework based on price corridor principles • Proposed a pricing model implementation plan to cover CX worldwide in 2014-2015	• Concrete and Pricing Talks (Webcasts) • Core team Virtual weekly meeting • Core team Face to Face (4 times per year) • Value Added Champions Network • Country Representatives Network • VAP Sales Performance Dashboard • Pricing KPIs Dashboard • Virtually Enabled by Shift
Aggregates	• Developed a Continuous Improvement Methodology • Established a Champions Network in 9 countries • Built a Career Development Kit for Aggregates • Designed a Business Improvement tool and dashboard • Defined a new Cost Allocation Methodology for benchmarking, new reporting to start in 2014 • Pricing initiative pilots started in 5 countries (US, MX, UK, FR, DE)	• Continuous Improvement Ideas Database • Ask the Experts Forum • Monthly CI Champions Practice Sharing Calls • Monthly Update Conference Calls • Virtually enabled by Shift
Cement Commercial	• Developed the Commercial Academy Model • Implemented the Commercial Common Language in Mexico, USA, UK, SAC and Asia regions • Implemented the "Train the Trainers" program to develop internal skills to continue training. • Content developed for next stages of Commercial Academy • Commercial Intelligence best practices replicated in Egypt and SAC • Commercial Management Model defined and deployed in Mexico	• Shift Community • Benchmark Tools • Experts discussion forums • Collaborative CAPEX evaluation • Best practice videos • Weekly newsletters

Discussion

CEMEX launched SHIFT in 2010 as an ESNs to support knowledge sharing within the organization, using a platform approach that acknowledges both the individual and organizational platform of the collaboration and coordination tools. Build upon prior work on interactive platforms by applying notions of collective interactions for organizing. SHIFT provided proof that knowledge sharing in distributed multinational organizations, may shape knowledge mobilization through consideration of social capital dynamics, support for relationships and interactions, context collapse, and network interactions.

One important feature of SHIFT as an ESNs was that it built collective memory by enabling employees to ask questions and archive and distribute the answers to a wide audience for future use, saving time and redundant effort.

The various applications and functionality (e.g., wikis, ESNSs, social tagging, and rater/recommender tools) provided different means for knowledge sharing. Ethnographic work helped identify independent processes, visibility and reputation worldwide, especially for enabling knowledge sharing.

Regarding the research question and propositions, the conclusions were that: the assessment for value creation was based on a sound and robust business case (see Table4).

Proposition1   (P1):   Institutionalization of Global Networks will positively influence ESN
Adoption was supported by the case of SHIFT in CEMEX

Table4. Findings and Rational for the Research Model's Proposition

PROPOSITION	RATIONAL
P1a: Globalization of large multinational organizations will positively influence ESN adoption based on the number of users	Supported by the number of active users
P1b: Governance of large multinational organizations will positively influence ESN adoption based knowledge mobilization	Supported by the identification of sponsors, executive and functional leaders, mobilizers, support and members
P1c: ITC Maturity in large multinational organizations will positively influence ESN adoption based on virtual work practices and knowledge mobilization	Partially Supported as SHIFT maturity is considered medium, integrating and evaluating business impacts
P1d: ESN incentives in large multinational organizations will positively influence ESN adoption based on reputation and visibility	Supported by providing incentives to motivate participation based on performance, reputation and visibility worldwide

Conclusions

The main factors that made SHIFT to be such a success was (1) an inclusive design (persona designed as presenting information according to 12 different styles and recognized patterns); (2) one-stop platform for every activity required by the employee; (3) simple and intuitive; (4) visibility and recognition based on contribution regardless of position or geography.

SHIFT was launched to all CEMEX employees in 2010 and by 2011 it became the official CEMEX Intranet. It began with 6 communities for the Global Innovation Initiatives and 400 members. In 2016 there are more than 2,400 communities with more than 43,000 members that are part of Shift.

SHIFT was designed as a social business network to tackle global common challenges. Projects moved forward without the barriers posed by traditional channels such as the email and face.-to-face meetings. The payoffs were lower cycle times, faster time to market, and real-time process improvement.

The incorporation of information technologies allowed CEMEX's workforce to make data accessible by sharing knowledge and best practices in a collaborative environment, across functions, organizational levels or geographies, sharing expertise.

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