Incentive systems in knowledge management to support large scale deployment of IT systems

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Abstract: Getting agreement across a large organization to focus on acceptance of new information technology is not easy, and even when accomplished, does not have any instant effect. Organizational factors and culture for innovation may be important for new technology adoption by end users. The question is how can appropriate use of electronic platforms support a proactive participation in knowledge management. The answer to this is very simple: Staff have to be motivated. This motivation can be achieved through incentive systems. Practical cases of getting knowledge management tools in big scale shows, that human factors need to complement an IT change. Comparison of cases from eHealth and IT sector proves applicability of behavioural models and innovation diffusion theories for knowledge management deployment to organizations. It also proves that working incentive system plays key role for success.

Keywords
Knowledge management, Electronic health record, eHealth, Incentive system

1 Background and Introduction

This paper discusses applicability of Knowledge Management (KM) known theoretical frameworks to support deployment of KM IT tools and presents some findings on the application of incentive systems at work.

Knowledge Management systems are often unsuccessful (Schultze, Boland, 2000), with some research outlining failure rates of up to 80% (Storey, Barnett, 2000). This highlights a need for research into how such systems are introduced, promoted and used within organisations to explore the factors which may lead to such failures. This highlights a need for research into how such systems are introduced, promoted and used within organisations to explore the factors which may lead to such failures. "While there has been much debate, theorising, and writing of a normative nature on the topic, there is a paucity of research of an empirical nature on Knowledge Management systems" (Butler, 2002)

Yet a McKinsey survey of executives from 40 companies in Europe, Japan and the US showed that many of them think that KM process is only about Information Technology and how getting the right KM tool is the key to achieving KM success (Hauschild, 2000). However KM definitely is not only about tools. There are many human factors that need to complement an IT change.

One of the largest KM initiative worldwide is healthcare electronisation, known as eHealth. In the context of Rogers' framework of the diffusion of innovations, organizational factors may be important correlates of EHR adoption by medical practices. Shortell's work suggests that the culture for innovation and change may be an important correlate of EHR adoption in ambulatory care. (Simon, 2007)

Governments in some countries decided to create financial incentive programs in order to support deoployment of new IT technologies like Electronic Health Record (EHR). For example the Australian Government announced as part of the 2012-13 Budget that new PIP eHealth Incentive requirements had been developed in order to support the delivery of current eHealth initiatives particularly the personally controlled electronic health (eHealth) records system. The eHealth Australian incentive aims to encourage general practices to keep up to date with the latest developments in eHealth to assist in improving administration processes and enhancing the quality of patient care by, for example, by supporting the capacity to share accurate electronic patient records (Australian government). The Medicare and Medicaid EHR Incentive Programs, created by US government, provide financial incentives to eligible professionals who are able to demonstrate meaningful use of certified EHR technology. A study prepared for the European Commission by DG Communications Networks presents (Codagnone, 2013) strongest barriers of HER adoption. About 45% of the respondents strongly agree that lack of remuneration for additional work answering patients' emails is a barrier to adoption. Lack of financial incentives (36%) and lack of financial resources (34%) were reported also as strong barriers. Other behavioral factors of technology adaptation such perceived control over, ease of use the technology, social

influences and influences by subjective norms have less impact according respondents to EHR adoption (EU benchmarking).

Such findings lead us to similar proposition what Denning (Denning) says, that it is important that the relevant behaviors are reflected in whatever incentive systems are in place in the organization. It maybe important to compare eHealth incentives with other large scale KM implementation in IT sector as will be discussed below.

2 Results of the literature review

2.1 Problem statement

Latest benchmarks and studies clearly indicates that financial incentives has strong catalyst effect on adoption of new KM technologies. As European Coordination Committee of the Radiological, Electromedical and Healthcare IT (COCIR) proposes, public authorities need to be ready to incentivise and reimburse more outcome-based care processes covering the entire care value chain.

Different incentive or reimbursment systems have been tested in different countries, such as:

- Payment differentials: bonuses and add-on payments that reward providers for adopting IT in relation to quality improvements
- targets (pay for performance)
- Direct reimbursement of eHealth-based services
- Tax incentives
- Financial penalty for not using IT

Evidence shows that each of these mechanisms - either used in combination or separately - have a positive effect on the adoption and use of healthcare IT, but have not yet been tested on a sufficiently large scale and for long enough to considered a sustainable business model. Industry therefore strongly encourages further research in this area. KM theory provides wide spectrum (Earl, 2001) of strategies and approaches. It seems to be, every large scale deployment transforming existing organisational practices needs to create their own KM deployment support framework.

2.2 Choosing the right KM strategy for business strategy

Management of the organization needs to balance its KM focus and establish and communicate its strategic KM direction. The variety of KM strategies can be applied depending on the business strategy. Most often used framework is Earls (Earl, 2001) seven schools model. Based on it Stenfors (Stenfors, 2003) presents it as predominant strategies of KM.

STRATEGY TYPE	STRATEGY	BRIEF DESCRIPTION
TECHNO-CENTRIC	Developing Knowledge-Based Systems	Capturing and codifying knowledge for subsequent reuse
	Developing Knowledge Maps	Indicating where knowledge is and how to find it
	Process Reengineering	Capturing knowledge in order to streamline processes
	Intellectual Capital	Capturing knowledge for subsequent commercial exploitation
BEHAVIOURAL	Innovation	Developing and diffusing new products
	Learning	Enhancing the learning capabilities of an organisation
	Transformation	Transforming organisational practices

Source: (Stenfors, 2003)

Table 1: Predominant strategies of knowledge management

Seeing it from perspective of deployment of new KM IT tools in large organisations, the behavioral schools seems to be a best base for creation KM strategy for such project. Synergy of methods for diffusing new products and culture change supported by incentive system should create good framework of organisations individual KM strategy in order to support their business strategy.

2.3 Incentives theoretical background

An incentive system consists of all incentives consciously offered, or rather all consciously devised incentive tools that support behavior patterns that promote corporate goals(Zaunmuller, 2005). Incentives may be intrinsic or extrinsic.

Extrinsic incentives serve the indirect satisfaction of a need, the extrinsic approach is "a means of satisfying needs" Something is done only to have positive outcomes or to avoid negative consequences. The classic extrinsic motivation is monetary gratification whereas intrinsic motivation it is just the opposite: Satisfaction is achieved immediately from the activity or its aim (Semar, 2004) Most individuals are not exlusively either intrinsically or extrinsically motivated. These extremes rather are the two opposite ends of a scale. Incentives can be categorised by two different aspects: First, derived from the difference between extrinsic and intrinsic motivation, they are divided into extrinsic and intrinsic incentives. In a second step, they are differentiated to material and immaterial incentives by their object of motivation (Mergel, Reimann, 2000)

Material incentives may be direct monetary allowances or grants of immediate monetary nature, i.e. special benefits. Such monetary incentives have the advantage of being variable, easily controlled, and absolutely universal (Semar, 2004) .

In practice, informal incentives, in the form of recognition by management, and visibility within the organization can often be more powerful incentives than the formal incentive system. While the establishment of formal incentives is important for the long-run sustainability of a knowledge management program, it is easy to over-estimate the value of incentives. The absence of formal incentives in the early days of knowledge sharing can become a pretext for not implementing the program. The establishment of rewards for individual knowledge sharing activities can signal the importance of knowledge sharing, but also run the risk of creating expectations of rewards for behavior that should be part of the normal way of conducting the business of the organization. In the long-term, however, the establishment of incentives through the regular personnel and reward system of the organization can establish a clear value framework that confirms that knowledge sharing is not a mere management fad, but rather part of the permanent fabric of the organization (Denning).

From the findings of motivation psychology we can define seven issues that are required for an incentive system (Semar, 2004):

What is wanted	*What it means*
Transparency	Show the connection between motivation for action and the usefulness action. Ensure frequent feedback of participants' performance
Individuality	Appeal to the individual's specific motives for performance
Sustainability	Adapt to the participants' motivational structure, step by step
Qualification	Ensure the participants' qualification for taking part in the knowledge management system. Learning components such as tutorials and courses should be applied.
Flexibility	Adapt the system to changing conditions and circumstances, i.e. the motivational instruments have to meet changing motivational structures.
Performance	Make performance results quantifiable on the basis of adaptable measurement. Fit rating of participants' results to their performance, i.e. achievement, outcome, and conditions.
Economy	Ensure balance of input and output, i.e. introduction and maintenance of incentive components must not require more effort than the success they generate.

Table 2: Requirements to an incentive system

2.4 Financial incentives to support the adoption and use of eHealth

A general practitioner will hesitate before investing money in electronic health records, and will be reluctant to spend time updating patient files if this additional work does not generate additional income. A recent study by the OECD demonstrates that financial incentives are critical in promoting the implementation and effective use of eHealth tools: grants, subsidies, bonuses or add-on payments that reward providers for adopting eHealth are effective, in particular in countries where physicians are remunerated on a fee-for-service basis. However, a one-off subsidy will support the initial set-up phase but will not encourage the ongoing use of eHealth. A reflexion is needed on what steps should be taken to ensure that the ongoing costs of eHealth systems are being met with sufficient funding, and that those who bear the financial investment (implementation and maintenance) also see a return on investment. In 2009, the United States adopted an incentive programme to support the adoption of eHealth by the healthcare sector over the following five-year period. The industry recommends that the European Union and Member States closely monitor the impact this stimulus plan has on the eHealth market and draw learnings to be applied to the EU market (COCIR).

Despite different studies, recommendations and evidence from some countries, eHealth Action Plan 2012-2020 does not articulate financial incentives as key tool for wider EHR adoption in EU. The Action Plan addresses the barriers and the following operational objectives:

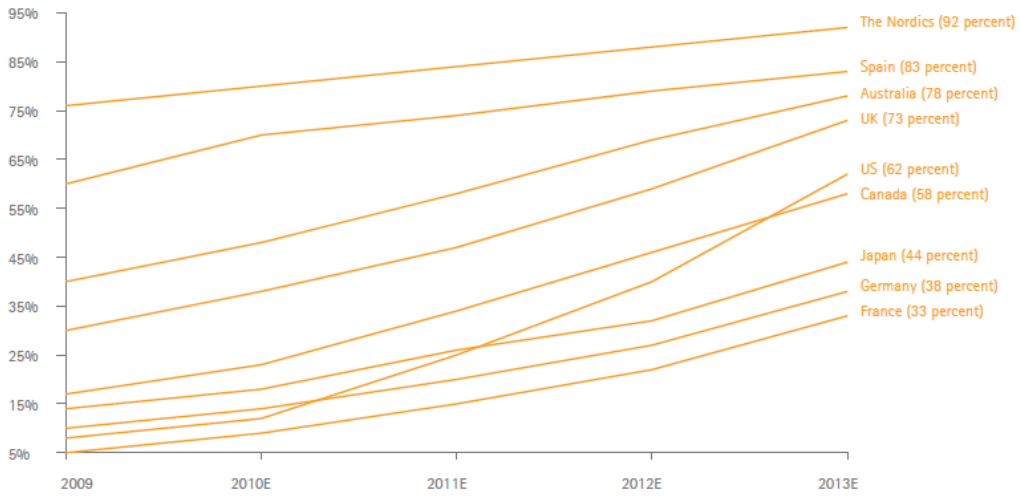
– achieving wider interoperability of eHealth services;
– supporting research, development and innovation in eHealth and wellbeing to
address the lack of availability of user-friendly tools and services;
– facilitating uptake and ensuring wider deployment;
– promoting policy dialogue and international cooperation on eHealth at global level.

On other hand OECD Health policy study clearly states incentive systems as important factor for EHR adoption. Physician incentives differ under different payment systems. Given the upfront costs entailed, the decision by physicians to adopt EHRs will depend both on the foreseeable financial returns on their investment, and the potential collateral benefits, which, in most circumstances, are unlikely to carry any substantial weight if there are net financial losses. Such collateral benefits could include enhanced professional standing, improved patient satisfaction, better health outcomes and patient retention, and intellectual satisfaction. Physicians will face different incentives under different payment systems. Each model of payment generates its own incentives depending on how providers produce health services, how efficiently and equitably services are provided, the quality of care, and how intensively patients make use of health services (OECD Health policy study).

3 Discussion

Since the Obama administration started financial incentive to encouraging providers to adopt EHRs, usage has increased dramatically. According to the Centers for Disease Control and Prevention survey in 2012, the percent of physicians using an advanced EHR system was just 17 percent in 2008. Today, more than 50 percent of eligible professionals (mostly physicians) have demonstrated meaningful use and received an incentive payment. For hospitals, just nine percent had adopted EHRs in 2008, but today, more than 80 percent have demonstrated meaningful use of EHRs.(HHS, 2013)

According ACCENTURE (Accenture, 2013) market research the United States is expected to leapfrog a number of countries in terms of hospital-based EMR adoption by 2013 and exhibits the highest projected growth rate of the nine focus markets. Comparing to development in other countries, relation among Incentive Programs and EHR adoption rate is visible and relatively direct.



Source: Accenture

Figure 1: Estimated Hospital-based EMR Adoption Rate Projections by Country

Comparing US EHR adoption incentive program to ATOS No-email initiative there are some clear similarities. ATOS management took a very high risk affecting a big change to the organizational collaborative culture. ATOS at the same time when implemented social collaboration KM tools, announced some favorable business results. CEO Breton credits the Zero email program as a primary contributor to this business success.

4 Conclusion

KM large scale implementation in big organisations needs very well prepared KM deployment strategy. Case studies presented in this article clearly proves two propositions. First, that both cases can be seen as KM deployment project with real application of available KM theoretical frameworks. Second, financial incentives are essential and key attributes of any large scale implementation, when new IT tool implementation requires huge culture and behavioural transformation in organisation.

5 Case studies

5.1 Meaningfull use incentive in US

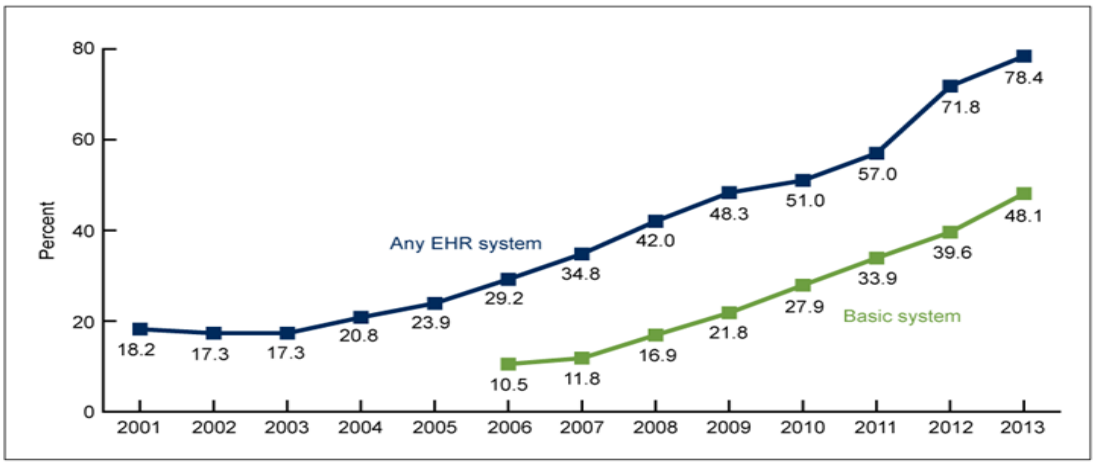
The Health Information Technology for Economic and Clinical Health Act (HITECH) allocates $19 billion in government funds to encourage the healthcare industry to adopt information technology in the way of electronic health records.

Integrating this technological advance will help medical practices prevent medical errors, cut unnecessary costs, limit paperwork and improve the quality of healthcare across the nation. Both the Medicare and Medicaid EHR Incentive Programs provide financial incentives to eligible professionals who are able to demonstrate meaningful use of certified EHR technology.

To qualify for 2012 payments, eligible professionals must meet 15 of the Stage 1 Core objectives and 5 of the Menu Set objectives. In addition to meeting the objectives just outlined, eligible professionals will also need to report on six “Clinical Quality Measures” that measure healthcare processes, outcomes, patient perceptions and organizational systems associated with the ability to provide quality health care.

Stage 2 rules require healthcare providers to offer EHR access to more than half of their patients. Clinics and private practices must also prove at least 10% of their patients are actually accessing healthcare information on EHRs. That includes radiological imaging results, which can be accessed directly in an EHR or through a link in the EHR to the images.

As a result of US government program, since financial incentives were started, adoption of EHR in US dramatically raised up, as can be seen in figure below



NOTES: EHR is electronic health record. "Any EHR system" is a medical or health record system that is either all or partially electronic (excluding systems solely for billing). Data for 2001–2007 are from in-person National Ambulatory Medical Care Survey (NAMCS) interviews. Data for 2008–2010 are from combined files (in-person NAMCS and mail survey). Estimates for 2011–2013 data are based on the mail survey only. Estimates for a basic system prior to 2006 could not be computed because some items were not collected in the survey. Data include nonfederal, office-based physicians and exclude radiologists, anesthesiologists, and pathologists.
SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey and National Ambulatory Medical Care Survey, Electronic Health Records Survey.

Source: Use and Characteristics of Electronic Health Record Systems Among Office-based Physician Practices: United States, 2001–2013

Figure 2: Percentage of office-based physicians with EHR systems: United States, 2001-2013

5.2 ATOS No e-mail initiative

Employee productivity is ever-present in the minds of senior executives. Social collaboration is gaining mind share as a means for increasing employee engagement.1 Additionally, discussions of email overload and the accompanying fatigue and productivity drain continue. The rise of social collaboration and sentiment on email overload are driving senior business leaders to consider how to gain productivity benefits by changing how the organization communicates and collaborates.2 And they are asking IT and business change agents tough questions on how to effect this transformation.

Why Atos decided for initiative:

- First, because Atos is a professional services organization, employee productivity is the foundation of business performance. And the business is highly collaborative by nature. The CEO and chairman, Thierry Breton, is relentless with the no-email campaign and believes driving higher productivity and advancing the capabilities of the company's workforce through social collaboration are absolutely critical to its future success.
- Second, it intends to offer a set of professional services for helping clients become highly collaborative organizations. So it believes success with its Zero email campaign will give it a competitive advantage in sales and delivery, because the company has done it.
- Third, it purchased the enterprise social networking/collaboration platform blueKiwi to use internally and offer externally as a product. Atos believes that using blueKiwi for its internal no-email campaign effort will forge the product under an intense fire and provide it with a differentiated story against competing platforms.

What they did:

Attempting broad efforts such as no email to change corporate collaboration culture first, with the expectation that productive and targeted new behaviors will naturally follow, is very rare and high-risk. The broad nature of a no-email approach lacks the specificity needed to define new, collaborative behaviors and to justify why they are necessary. Winning people's hearts and minds is highly challenging, because people won't internalize the need to change or understand how to change. This challenge is exacerbated with no-email initiatives, because for many people, email use is habitual in their daily routines, and for some, it is like an addiction. A general "improve productivity" goal for social collaboration most often leads to a technology-centric approach that suffers severely from poor adoption. The more prevalent and less risky approach is to change culture incrementally, pursuing smaller social collaboration solutions that focus on causes around which people will rally and that target more specific business outcomes.7

Unlike a smaller initiative centered on a compelling cause to mobilize a grass-roots movement, broadly empowering employees with social collaboration tools will usually only motivate a small and fragmented group of employees with pent-up collaboration desires. These early adopters need only the opportunity, rather than justification. However, this group of self-starters rarely can bring communities to critical mass and sustain their engagement. Indeed, Atos discovered that participation in pure grass-roots communities was very low. By early 2013, of the 2,800 communities that formed, 2,000 were basically dormant. No-email, big change initiatives by

their nature lack tangible motivation at the individual employee level. Justifying participation to the masses requires a different approach based on strong and obvious leadership from senior executives followed by managers who compel participation at lower levels in the organization. In short, the lack of grass-roots appeal needs strong counteraction from leadership and management.

How they motivated:

Atos made substantial investments to gain leadership and management attention and garner their support. They tied performance evaluations and bonus structures to the initiative. In 2013, 10% of a top 700 leader's bonus was tied to his or her no-email campaign performance.8 In the beginning of 2014, Atos established five Community Vibrancy Key Performance Indicators (KPIs) for its leaders and managers, including:

1. Continuity (member visits trending per day/month/quarter)
2. Initiative (members originating posts trending per day/month/quarter)
3. Engagement (members commenting on posts by others trending per day/month/quarter)
4. Reaction (member responses/posts trending per day/month/quarter)
5. Impact (member views/post trending per day/month/quarter)

Again, bonus incentives are applied. Leaders who achieve three out of five KPIs get a 100% bonus; those with four or more out of five get 130% of bonus. And the next step for recalcitrant leaders is removal from the leadership ranks. As additional incentive, Atos opened up equity ownership of blueKiwi to its management ranks.

By gaining management engagement, senior leaders are delegating employee-level justification to individual managers who interact more frequently at team or one-on-one levels. Managers are expected to translate the general aspects of a broad culture change effort into specifics that will resonate with individual employees. Managers are often not prepared to meet this expectation and will need assistance.

How they integrated KM to overall business strategy

Affecting a big change to the organizational collaborative culture with a no-email initiative is very high risk, and mitigating that risk requires an unfailing commitment from senior leadership and a hefty investment. Atos leadership, recognizing that they are facing a big change, has that leadership commitment and is making prodigious investments. Based on Gartner client interactions, we estimate that Atos' investment is well over 500 times what is usual for most organizations pursuing social collaboration.

KM results:

- >74,000 enterprise social network users
- More than 7,446 communities created (n = members)
  - 7,145 small (n<200 members)
  - 250 medium (200<n<1,000)
  - 46 large (1000<n>5,000)
  - 10 extra-large (n>5,000)
- >15,000 employees posting at least once per week
- >35,000 employees viewing 1.9 million pages per month (as of December 2013)
- >15,000 posts by Atos top management in December 2013

Business results:

Atos announced some favorable 2013 business results, including a 7.5% operating margin. up from 6.5% in 2012. Free cash flow increased year over year from €267 million to €365 million, earnings per share increased more than 50%,4 and selling, general and administrative costs declined from 13% to 10%. CEO Breton credits the Zero email program as a primary contributor to this business success.5 Because numerous factors impact overall business success, it is difficult to tie a no-email program directly to corporate performance. In fact, Atos did not achieve zero internal email by the end of 2013. It reduced internal email message traffic by approximately 60%, with an 80% reduction targeted for mid-2014. However, there is evidence of strong social collaboration adoption and numerous success stories that, in aggregate, could have impacted overall corporate performance (Atos Gartner study).

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