A Case Study of a Financial Services Provider: Progressing Towards Applying Advanced Enterprise Engineering

Completed Research Paper

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ABSTRACT

This paper reports the findings of an empirical investigation of an organization that is progressing towards applying advanced enterprise engineering. Advanced enterprise engineering focuses on important aspects for strategic planning of an enterprise. The investigation adopts an interpretive case study approach and explores qualitative data on aspects of enterprise engineering in practice. The paper identifies various practices, which are prevalent in progressing organizations. This study suggests characteristics that describe the readiness of an organization to apply advanced enterprise engineering approaches. The originality of this study is its description of the organizational and sub-cultural context, communication issues, change approaches and identified challenges of an organization progressing towards applying advanced enterprise engineering. This case study analysis focuses on social aspects in a progressing organization.

Keywords

Enterprise engineering, progress, change, interpretivist research approach.

INTRODUCTION

Today's enterprises can be regarded as dynamic and vibrant systems that continuously adapt to changing circumstances (Op't Land et al. 2008). Enterprise engineering (EE) looks at enterprises from a disciplined perspective. Some of the EE literature describes the elementary approaches and processes of an enterprise (e.g., company, government agency) and focuses on a general and integrated perspective of business and IT. This enterprise wide view becomes increasingly critical in a turbulent environment. EE is practiced as a valuable instrument in all enterprises (intrinsically or extrinsically), whereas only few enterprises carry out extrinsic EE that we refer to as "advanced" EE in this paper. Advanced EE seeks to accomplish benefits such as IT alignment (Aier et al. 2009; Ross et al. 2006), cost reduction (Brown 2000), standardization (Nightingale and Rhodes 2004), and agility (Op't Land et al. 2008; Ross et al. 2006). In contrast to not-advanced EE (intrinsic EE), advanced EE involves sophisticated management aspects like enterprise architecture frameworks (e.g., TOGAF (Josey 2009), E2AF (Schekkerman 2004)).

A lot of effort was put into knowing more about different aspects of advanced EE, which may involve business-IT alignment, cost reduction, standardization and management / governance. However, it has not been investigated when an organization is "ready enough" for imposing advanced EE approaches, so that it may be embodied in the organizational context. An advanced EE approach could help to forge a balanced and consolidated design of the enterprise, involving people, their competencies, organizational structures, business processes, IT, products / services, finances and its environment. Therefore, better *insight about the progress towards applying advanced EE* is important for enterprises that consider taking advantage of the expected benefits advanced EE offers. More knowledge about this evolution process may help practitioners to be aware about the status of their enterprise. This may involve an understanding of when the enterprise is ready enough for advanced EE or what aspects should be considered to progress towards advanced EE that are still missing. We understand an organization, which is progressing towards the advanced EE as something with the following attributes:

- Organizational *performance improvement goals internalized* throughout the organization,
- Repeatable - *structured processes dominate* the organizational practices,
- *Governance* through a steering approach of organizational processes, and

- *Saturated* state of absorbed and combined organizational *processes*.

That situation has not been, researched in-depth as of yet, which illustrates a literature gap. We found no previous case studies that investigate the practices of an enterprise that is progressing to apply advanced EE. Thus, this research may help to get a better understanding of this situation and asks the following research questions:

- What practices are prevalent in a financial service providing organization that is about to apply advanced EE?
- What influences the organization in this setting?
- What social aspects are prevalent in this setting?

This paper presents an in-depth case study of a financial services provider in Luxembourg. This field is of high interest to study EE, because it involves great needs for regulatory compliance with various standards (e.g., national and international financial markets), cost reduction and business / IT alignment. Answering the research questions will involve a characteristic view to an industry domain. Moreover, an investigation about what practices are prevalent in an organization progressing towards using advanced EE approaches requires the collection of qualitative data. Hence, qualitative data has to be appropriately interpreted so that researchers may derive relevant implications of the research findings.

This article is structured as follows. In the next section we present our literature review, and the third section outlines our research methodology. The forth and fifth sections present our case description and analysis respectively. The paper concludes with a discussion on the implications of our research findings for EE with its respective processes, approaches and challenges in practice, together with limitations that will be addressed in proposed future studies.

LITERATURE REVIEW

The purpose of this research is to obtain a theoretical interpretation from empirical data (Orlikowski 1993). However, we also draw on available literature as a lens to develop our theoretical interpretation. We considered two main streams as most helpful to gain theoretical insight in the potential aspects of EE. One stream covers driving motivations of applying advanced EE (Schönherr 2009). Since enterprises are inherently social constructs, the second stream describes aspects of social life in general. We use Structuration Theory (Giddens 1984) as a general social theory that helps to analyze practices of not-advanced EE. Insight from the social sciences help to understand the case study better and enrich the discussion.

Advanced EE

Previous literature investigated common drivers and reasons for applying advanced EE measures. The driving motivations of applying advanced EE can be differentiated into internal and external drivers (Schönherr 2009). Internal motives include: Business – IT alignment (Aier et al. 2009; Ross et al. 2006), cost reduction (Brown 2000), standardization (Nightingale and Rhodes 2004), governance (Aier et al. 2009), and agility (Op't Land et al. 2008; Ross et al. 2006). Business – IT alignment is a continuous concern for information systems executives and according to Schönherr's (Schönherr 2009) literature analysis is also a central objective of advanced EE research by academic and pragmatic sources. Cost reduction is another objective of EE research (Schönherr 2009) and involves financial efficiency and business effectiveness. Standardization is an important factor why organizations try to apply advanced EE approaches to increase maintainability, reliability, and security of processes and/or technology. Governance mechanisms through e.g. technology and/or processes establish and monitor EE approaches. Agility of organizations is another reason why EE approaches are applied focusing on the increasing speed and flexibility that is required in turbulent environments (Op't Land et al. 2008). In addition to those internal motives, Schönherr (Schönherr 2009) cites several external motives that include various compliance regulations such as Clinger-Cohan Act, Sarbanes-Oxley Act, and Basel II (Harmon 2005; Niemann 2005). Those compliance regulations place increasing challenges on businesses' internal control systems and IT (Niemann 2005) and are required to be fulfilled in order to stay in competition. This literature strand is insightful to understand the various objectives of advanced EE approaches.

Means to analyze not-advanced EE

Organizations are social structures to which social theories are applicable. This section describes one of those theories that we use, to better understand not-advanced EE activities.

Learning from information systems research

Literature about not-advanced EE is scant; hence it is useful to draw on aspects of social life in general. In addition, researchers, who engage in social theories, are applied in a major aspect of EE: *information systems* (Jones and Karsten 2008). Structuration Theory (Giddens 1984) was applied in information systems research to some extent, and Jones and

Karsten (Jones and Karsten 2008) provide interesting research insights about the various ways Giddens' meta-theory has been used. They state: "as a general social theory, structuration should be applicable, in principle, to any aspect of IS research studying the relationship between IS and organizations (or society, more generally)." (page 138)

Structuration theory

Jones and Karsten (2008) distinguished four themes in the structuration theory, which are valuable in studying the domain of EE: social structures, agency, knowledgeability, and temporality. First, Giddens (Giddens 1984) emphasize that social structure is continuously being created through the flow of everyday social practice. Thus, social structure is the consequence of ongoing production and re-production of practices by individuals. In this theme Giddens distinguishes between rules of social life and the formulated rules. Rules of social life are approaches applied in the continuous creation and re-creation of social structure, whereas formulated rules are not necessarily understood as rules per-se, but rather their interpretations. Second, agency describes the individual's ability to perform actions. Thus, agency is about events that are driven by social actors, in which the actors could choose to act according to the given moment. Third, knowledgeability is another important theme in Giddens' structuration theory, since all human beings are knowledgeable social actors and know a great deal about the conditions and consequences of what they do in their daily life. Fourth and final, time and temporality has been a reappearing theme of Giddens' work (Jones and Karsten 2008). Structuration links the temporality of the individual with that of institutions (Jones and Karsten 2008).

Application of structuration theory in this research

We intend to apply Giddens' meta-theory as a "sensitizing device" (Walsham 1993) to assist the analysis of the gathered empirical study material. Therefore, there is not a formal link between Giddens' meta-theory and EE. However, applying Giddens' meta-theory as a "sensitizing device" helps the researchers to understand the practices during the progress of an organization towards advanced EE. The next section provides more details about the research approach.

RESEARCH APPROACH

This research was part of a study concerning EE in the greater region of Luxembourg, which involved 14 organizations. The research design tried to obtain more insight into the organizational practices in the field of EE. It started with collecting empirical qualitative data about the intrinsic or extrinsic application of EE practices in the respective research participants. This collection involved mainly semi-structured interviews in order to explore those EE practices. This research approach generated an immense data load, and this paper investigates the particular practices in-depth at FiSCo (company name of this empirical case study remains anonymous and stands for a Financial Service Company). Selecting a single case-study is a well suited method for examining a phenomenon (Hartley 1994), when research addresses "how questions" and hence interactions between people and the organization (Miles and Huberman 1994).

FiSCo is a service company in the financial sector in Luxembourg. Single case studies have several advantages for research of an exploratory nature, since it generates insights and rich descriptions (Yin 1994). This meets our needs to explore an organization that is progressing towards advanced EE.

Data collection

The research approach adopted in this study is an interpretive case study approach (Orlikowski and Baroudi 1991). This involves a collection of detailed, qualitative data concerning the context, and processes of practices in an organization. On the basis of this data, an interpretive researcher may elaborate on an in-depth understanding of practices in this instance. For further abstraction and generalization a larger meta-theory (such as structuration theory) is required, which in interpretive research is a part of the research approach (Jones and Karsten 2008).

The research team visited the headquarters of FiSCo and the research idea was presented to a committee of top-level executives. This committee together with the researchers decided the most appropriate candidates for interviews, so that the research purpose would fulfill and the choice adequately cover the entire observation. The purpose was to get a variety of perspectives that involved different departmental views on aspects of EE in practice. Those perspectives include viewpoints from all different hierarchy levels in the organization.

During January of 2012 FiSCo provided the research team the opportunity to interview nine persons (Table 1). Each individual was interviewed once. We recorded and transcribed the interviews, each lasting approximately 60 minutes, held in a relaxed atmosphere. Although we collected a lot of data, we used indirect speech in this paper. This is because all the interviews were held in French and we tried to avoid any misinterpretations through translation of quotes.

We asked research participants about their individual insight into the organizational and sub-cultural context, communication issues, change approaches, and identified challenges of their work environment. For doing so, the researchers designed a questionnaire, which involved four main sections: contextual situation of interviewees' work environment, to-be situation of enterprise engineering, as-is situation of enterprise engineering, and interviewees' comments. Naturally, we dealt with a broad spectrum of individual insights, since we sought to cover EE aspects of all kinds.

#	Responsibility
1	CEO
2	Chief Operations Officer
3	Business unit leader of "Acquiring Services"
4	Program Management Leader
5	Department leader in the business unit financial institutions Luxembourg
6	Services and Fraud
7	Key account manager of Issuing
8	Department manager of "Production & Shared Services"
9	External consultant in the area of "Service Delivery"

Table 1. Roles of interviewees in FiSCo

We ensured that the interviews would remain confidential to encourage frank interviews. In addition, we collected detailed information about FiSCo. However, we needed to limit the detail of information, since otherwise it would be relatively easy to trace the origin of data back to the organization in such a small country as Luxembourg. We therefore provide only data that are most relevant to this research about practices in an organization that is progressing towards advanced EE.

Analysis of interview data

We filed the data sets of qualitative material electronically in spreadsheets, in order to simplify and accelerate further research progress. Transcriptions were read and reread to familiarize one researcher with the information and to help determine tendencies. In particular we looked for a better understanding of what practices happen in an organization that is progressing towards applying advanced EE.

For data analysis we used an approach that is referred to as distinctive types of coding and was based on Miles and Huberman (1994). The data analysis was conducted in three steps:

1. Deposit data with some meaning in order to expose the various activities, events, and incidents.
2. We derive meaning from the data, put it into context and clarify its significance; hence, we developed a better understanding through short descriptions in table form.
3. Identification of patterns, leitmotivs, or causal links in the data collection.

By applying this procedure to the collected data we were able to recognize various aspects of the theme of this research (practices in an organization that is progressing towards applying advanced EE). We were able to build a bottom-up conceptualization of the collected and analyzed data sets while using the reviewed literature as guidelines to steer the investigation of a progressing organization. Unlike Caporarello et.al. (2010), this research proceeds without hypothesis and focuses on the organization instead on individuals in the conclusion.

CASE STUDY OF A FINANCIAL SERVICE SUPPLIER

In this section we look at the case of FiSCo (Financial Service Company) in terms of its work environment, organizational communication, change approaches, and organizational challenges.

Work environment

FiSCo is engaged within the financial service industry in Luxembourg, a business field known for major influence from both national and international organizations (e.g., competing companies, and legislation). FiSCo is a Luxembourgish company that was founded as cooperation between the shareholders from the financial industry. FiSCo's operating services provide back-office activities, such as clearing of stock markets, transactions and payments. A few years ago they merged with another international company in the finance sector, as a result of which it now consists of three business units:

a) acquiring services (aims at the merchants and companies wanting to have access to payment services)
b) issuing services (provide service appliances)
c) legacy unit (dedicated to business partners and previous founders)

Although the merge with another company started a few years ago, FiSCo is still in transition, so the migration projects are ongoing. This causes changes to all the established tools, applications and processes. According to the interviewees the transition involves several issues, such as an alteration of the strategy, which now involves a better alignment to international operations, and the merged companies offer a complete value chain of financial service to customers.

The interviewees of FiSCo stated that it has strong legal regulation, which influences the business to a large extent. Furthermore, all interviewees shared a similar understanding concerning the historical legacy within the company. The interviewees stated that their environment is relatively turbulent. This turbulence is caused by evolving techniques on how services may be delivered and through frequent modifications in tactics of the ongoing merge and differences in external regulations. Despite this turbulent environment, the company established a strong culture with long-term goals that involve a 3 – 5 years development plan on an elaborated future business model. However, most interviewees stated that there is a communication gap between management and operational people concerning those long-term goals. In addition, all interviewees agreed on having a very strong focus on day-to-day actions, since their service delivery is considered eminent for Luxembourg. FiSCo has a strong customer focus, according to the interviewees, and some people (like the CEO) said that the focus is even too strong. This strong focus on the customer demands is still part of the company heritage of providing service to the founders of FiSCo.

Organizational communication

The people at FiSCo provided no coherent answer concerning the company's business goal. One manager stated that the business goal is to "be a prime supplier of high quality financial services", whereas others stated "we do not know about a particular business goal in our department". The interviewees stated their involvement in various regular meetings, and that those ways of communication are highly integrated in their business processes. For example: incident management shares the meeting and meeting minutes, daily stand up meetings in the morning, another meeting is held before noon if there are issues, and almost every process is written in a procedure. In addition, interviewees stated that any update of systems involves an update of norms and they become visible to everybody through the technology. They also claimed that technology is not provoking the change, instead its processes induce adjustments in the habits of people.

Change approaches

We also asked the interviewees from FiSCo about the prevalent change approaches in their organization. They stated that the merge with another international company involved two main issues: first, change of the strategy, which involves a better orientation towards foreign markets; and second, the merged company offers a complete value chain for customers. This merge was conducted relatively carefully, because the restructuring lasted a few years. In their day-to-day tasks the interviewees stated that new and altered business processes induce changes in the habits of people. The interviewees also stated that FiSCo maintains their legacy system, while they design the new system, which is provided by an external vendor. According to the CEO, the adopted methodology had not been adapted for certain elements. They piloted an open system, which is instable by nature. However, through weekly follow-ups they improved competences and processes, and maintained flexibility. In addition, FiSCo facilitated user involvement at the time of testing with a regular exchange with the support people, so that dissemination to relevant people works better.

The people at FiSCo stated that almost everything is written in a procedure as "management of incidents". Furthermore, employees follow those procedures highly conscientiously. Interviewees said that FiSCo employs a capability strategy, which should improve the decision making process for launching a new service. This strategy involves an increased awareness of the state of the art of their business market that does not only respond to a sole and unique customer request.

Organizational challenges

The interviewees reported various difficulties that are related to technology as part of challenges the organization faces. For example, difficulties were encountered due to old technology, when it approached the end of its lifecycle. People at FiSCo described the unclear future technology landscape as being challenging. Although it appears that FiSCo underwent a careful restructuring of the organization, some interviewees mentioned witnessing many simultaneous changes, causing a lack of time and resources. Furthermore, interviewees stated issues about personal semantics, so that the comprehension and understanding of terminology appears to be challenging within a multilingual environment of Luxembourg. Some people also mentioned that processes could be more aligned, because sometimes it is not clear which process is currently followed, who is responsible for what, and which action points need to be taken. In addition to a review of existing processes, the alignment of processes could be also improved through a coordinator, which eases the relation between business and IT.

Summary

The case study reveals various characteristics about the contextual and processual setting of FiSCo. This involved various attributes of the work environment, organizational communication, change approaches and identified organizational challenges by the interviewees, as illustrated in Table 2.

Work environment	Business field with high regulation, strong customer focus
	Strong historical legacy; Turbulent environment
	Strong long term goals; strong day-to-day focus
Organizational communication	No coherent answer concerning the company's business goal
	Regular meetings
	High integration of avenues for communication in their business processes
Change approaches	Careful restructuring of the organization
	Maintain legacy systems, while designing the new system (provided by an external vendor)
	Highly descriptive procedures, which are thoroughly followed
Organizational challenges	Technology (legacies and future landscape)
	Many simultaneous changes
	Personal semantics issues
	Alignment of processes

Table 2. FiSCo summary

This overview describes only the practices prevalent in the case of the investigated FiSCo. At FiSCo strong faceted long-term goals, day-to-day focus and customer focus are prevalent. According to the interviewees, the long-term goals and day-to-day focus is highly regulated from outside and internal management. Second, it appears that interviewees stated no coherent business goal, despite the strong internal management. The following attributes match FiSCo:

- Organizational *performance improvement goals internalized* throughout the organization,
- Repeatable - *structured processes dominate* the organizational practices, and
- *Saturated* state of absorbed and combined organizational *processes*. However, FiSCo has only a
- weak *Governance* through a lack of holistic steering of organizational processes.

These characteristics amplify the researchers' impression that advanced EE methods may further improve FiSCo's practices, because advanced EE methods promise better governance through holistic steering of the organization. For example, the interviewees stated that processes could be more aligned, because roles and required tasks are not clear enough. Application of advanced EE methods may improve these alignment issues through better governance.

ANALYSIS AND DISCUSSION

In this section the case findings will be discussed based on the presented theoretical background.

Influences on an organization progressing towards applying advanced EE

The literature review about advanced EE indicated a differentiation between various drivers, such as Business – IT alignment, cost reduction, standardization (Schönherr 2009). This research indicates that topics of Schönherr's (2009) literature analysis are also prevalent in an organization that is progressing. Therefore, those topics are not only important for advanced EE, but in organizations that come near advanced EE as well. However, it appears that some topics are of major influence (standardization and external regulations, business – IT alignment, agility). For example, compliance regulations are of high importance and very influential in the investigated organization. Table 3 provides an overview of the main topics in a progressing organization.

Advanced EE drivers	Influence in the case study
Standardization and external regulations	Very important and influential
Business - IT alignment	Important; identified as a challenge
Agility	Important; strived in change approach

Table 3. Influences on an progressing organization

Analyzing social aspects of a progressing organization

The previous section provided a list of topics of a progressing organization. In applying Giddens' (1984) meta-theory, we can better understand the social aspects that reason why organizations experience progress. Those aspects involve social structures, agency, knowledgeability, and temporality and routine, as previously explained.

Organizations and their social structures are continuously being created through the flow of everyday social practice, such as the interaction between various agents within an enterprise. Social structure is the consequence of constant and routinized production and re-production of practices. In the analysis we found that standardization and external regulations are very important and influential in a progressing organization. However, that does not mean that standardization and external regulations just need to be established, rather they need to be institutionalized as part of the organizational routines in the ongoing social interactions. Organizational routines consists of two related parts: agency and structure (Feldman and Pentland 2003). Agency, which refers to the specific behaviors or activities in which humans engage, is guided by the rules and contexts of social interactions. Structure refers to the abstract idea of the routine (Feldman and Pentland 2003). The continuous interplay between structure and agency is the reasoning of ongoing organizational change, hence progressing organizations. The social structures we identified provide enough space to empower agents to cope with challenges and difficulties. Within this spectrum of continuous actions are the daily tasks that keep the enterprise running, also without advanced EE. However, outside this spectrum of continuous actions are the identified challenges the interviewees described in the case study, such as alignment of processes. This relates to the organizational actors knowledgeability, that agents know about the facts of their action and that of others, drawn upon the production and re-production of that action. Whereas this knowledge is hardly transferable (Orlikowski 2002). According to the gathered insight of the case analysis, agents of an organization know a lot of things about their situation. The case study exemplifies that asking about the interviewees' work environment, communication issues, organizational change approaches and identified challenges of their organization leads to the conclusion that the interviewees have a reasonable comprehension of their organization.

Although the interviewees did not mention any particular motivation to apply advanced EE techniques, the interview series may spark an idea, since the seed of change is in every act which contributes towards the reproduction of any 'ordered' form of social life (Giddens 1984; Jones and Karsten 2008). Furthermore, the internalized improvement goals of the organization seem to be prevalent, since actors are aware of organizational challenges, hence it is upon the agency of the "right" individuals to act upon it with the potential help of advanced EE. That those organizational challenges are not part of the interviewees' spectrum of continuous actions is not necessarily an obstacle, but it shows where this organization may intensify their advanced EE efforts.

CONCLUSIONS

This paper contributes to the discussion about EE. The research was done in the context of an organization, which is progressing towards advanced EE. Obtained insights of empirical data suggest that further evolution of the organizational

practices should be established through advanced EE. We identified the prevalent topics of an organization progressing towards advanced EE (Table 3). One major topic is that practiced standards and regulations are very important and influential. Social structures and their institutionalization through agency are important aspects in the social life of organizations. Hence, it is of great help to look at general social theories for analyzing the practices of an organization. It is important to mention that the advancement of an enterprise is not only an indicator of the commitment by top-level executives to introduce advanced EE techniques. Rather it is part of organizational progress that implies a certain readiness of the organization to evoke advanced EE. Hence, the concepts of structuration theory are valuable in analyzing an organization about its preparedness when organizations seek a rather grounded appraisal, versus a biased point of view that consider EE tactics as a mean to solve all problems. However, advanced EE frameworks may serve as a scaffolding to engineer enterprises.

The case study provided in-depth insight into the practices in an organization progressing towards advanced EE. Additional research may elaborate those insights in other organizations that are in a similar situation. Although we are fully aware of the limitations of our current work, future research will address them in greater extent to verify if the discovered characteristics of organizations progressing towards advanced EE are generalizable. Additionally, we seek to elaborate on additional literature from the fields of decision-making, dynamic capabilities, and organizational change, which this paper did not analyze.

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