Challenges of business processes management in healthcare: Experience in the Irish healthcare sector

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Challenges of business processes management in healthcare
Experience in the Irish healthcare sector

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Abstract

Purpose – The purpose of this paper is to outline a framework for analyzing healthcare process management projects. By using this framework, it seeks to analyze a system implementation in Ireland. The system aims to standardize healthcare human resource and payroll for the Irish healthcare sector.

Design/methodology/approach – A popular system and business process implementation is analyzed in Ireland. The research intends to use this case scenario to identify success and failure, which in turn forms the basis to propose a conceptual reference method for introducing healthcare process management.

Findings – The healthcare sector has shown that it has, compared with other sectors, a relatively underdeveloped information system structure. In this context, the importance of reducing healthcare costs and streamlining workflows, processes, and care pathways is ever more seriously recognized. However, despite the importance of process management, currently, internationally very few guidelines are provided for introducing healthcare process management in hospitals.

Practical implications – The paper provides a good example of a large-scale, nation-wide business process management (BPM) project; shows the different facets of BPM success factors; and helps to raise awareness for both managerial factors and domain-inherent, structural, and content factors.

Originality/value – The analysis revealed some interesting results. The reasons for failure in healthcare are rather more content and structural in nature than solely project management issues.

Keywords Case studies, Human resource management, Information systems, Project management, Public administration, Ireland

Paper type Research paper

Introduction

As one of the largest consumers of public spending, the healthcare sector is increasingly recognized amongst most countries as an important economic sector with rapidly growing expenditure. The healthcare sector demonstrates, that compared with other sectors, it still has a relatively underdeveloped information system (IS) structure (O'Riain and Helfert, 2005). The inadequate IS along with the general challenges within the healthcare sector, highlights the need for improvements. Challenges the healthcare sector faces are for instance, the declining resources, increasing patient complexity with an increasing need for high-quality healthcare services. Most governments recognize the importance of reducing healthcare costs, streamlining workflows, and care pathways, enhancing patient care and thus improving effectiveness and efficiency in the healthcare sector. Consequently, a high pressure for healthcare providers exist to increase productivity and to reduce costs.

Recent efforts to improve the effectiveness and efficiency of the healthcare sector have been made, for example concepts to integrate healthcare systems (Mori, 2004).

Many countries and healthcare providers have attempted to reduce costs and increase productivity by implementing enterprise resource planning systems or process management systems. Despite these efforts in many countries, concepts for the implementation of adequate healthcare IS, such as integrated electronic health record systems are often far away from realization.

A prominent example in Ireland is the implementation of Personnel Payroll Attendance and Recruitment System (PPARS). This scenario will be used in this paper as a background case study. The PPARS system aims to be a standardized healthcare human resource (HR) and payroll system for the Irish healthcare sector. The system was seen as crucial by the government in order to reduce HR expenditure. It is estimated that HR expenditure account for approximately 70 percent of the overall expenditure on health (Department of Health and Children, 2004). The system was intended to be used by all health agencies and providers within Ireland. It should facilitate and address any deficits within the HR management function that includes workforce planning, time management, staff retention, recruitment, benchmarking, and management information (Department of Health and Children, 2004).

The implementation of the PPARS project can be divided into two broad phases: the first phase from 1998 to 2002, when the initial concept was proposed and its first implementation attempted. Following the failure of the project to deliver, the original planned scope; the second phase started in 2002 and ended 2005 with the indefinite postponement of the project:

(1) The first phase was characterized by proposing a concept for the creation of a computerized system managing personnel and payroll. The main goal of the system was to enable better collaboration between the distributed health service providers and to deliver standardized outputs. The system's functions included personnel administration, payroll, attendance monitoring/control, rostering, recruitment and superannuation. In this initial phase, a fixed price contract for the implementation was awarded to Bull Information Systems Ltd (BISL). The system's implementation was based on SAP R/3 and should have been completed within approximately two years. In the initial phase, it became obvious that the configuration and adaptation of the system had been underestimated. Some of the reasons included that prior to the implementation most of the HR and payroll processes were carried out manually. The manual processes resulted in large variation of process execution and often required specific domain expertise. With the termination of the BISL contract in 2001, the first phase ended. At this stage, a very small number of functionality had been implemented. In order to meet individual specifics of health providers, several customized versions of the system existed.

(2) In May 2002, the Department of Health prioritized the national coverage of the project and extended the number of involved health providers. The estimated cost of the project in February 2002 had been put at €109 million with an expected completion date in 2005. After experiencing large implementation and operational problems with the system, in 2005 it was decided to freeze the project's implementation.

The project is generally regarded as not successful, with a large overdrawn budget. The current version of the PPARS system lacks the required functionalities.

Other examples in healthcare show similar outcomes and many projects in healthcare sector are failing to achieve their potential. As the PPARS project demonstrates attempts have been made to apply process management to the public service sector for many years. Similar approaches have been made in the domain of healthcare and the public sector (Scheer *et al.*, 1996; Reichert and Dadam, 1998; Dadam *et al.*, 2000; MacIntosh, 2003). In many industries, process management in conjunction with the introduction of enterprise resource planning systems have been proven to be a successful means of reducing costs and increasing productivity and quality (Becker and Kahn, 2003; Beretta, 2002).

Many researchers have addressed process management issues in various sectors, resulting in a plethora of research streams and publications. Case (1999) for example found that more than 700 articles in one year were published. Many frameworks for business process management (BPM) have been proposed (Grover and Kettinger, 1995; Grover *et al.*, 1993). In order to achieve BPM, research identified information technology (IT) as a key enabler (Hammer and Champy, 1993; Davenport and Short, 1990). IT reduces the degree of mediation and enhances the degree of collaboration (Teng *et al.*, 1994), thus enabling an organization to coordinate their activities more effectively. The relationship between IT and business processes is recursive (Davenport and Short, 1990).

However, there are an abundance of success stories and a drought of failure case studies. Despite the advances in IT, many BPM projects fail. Researchers investigated challenges and success factors of BPM implementations in various sectors (Grover *et al.*, 1998; Teng *et al.*, 2000). At the same time, projects have achieved real benefits from process management and flow investigation (Haraden and Resar, 2004). In the USA, many organizations have started business project management project during the 1990s. Bashein and Markus (1994) estimate for example that 88 percent of large organizations were involved in BPM projects. In Europe, BPM was similarly introduced (Wray-Bliss, 2003).

Process management projects aim to streamline the services and processes, thus making it more cost efficient, while delivering better quality and reducing response times. Surveys show that if successfully implemented, process management can save up to 79 percent of costs and time (Belmonte and Murray, 1993). In the USA, for example, the length of stay for patients has fallen by 33 percent as a result of the introduction of clinical process management (Buescher *et al.*, 2004). Health process management should be seen as an important strategic task for all healthcare providers.

Analyzing some of the failures of process management implementations we observed that reasons are often routed in managerial and domain inherent aspects. Whereas domain inherent aspects are difficult to generalize, managerial aspects can be addressed by reference guidelines. Reference guidelines could help to reduce the failure rates. Currently, there are internationally very few guidelines provided (in form of a comprehensive and consistent set of methods and techniques). Some international projects are under current progress, such as the "Pursuing perfections" project incorporating thirteen international health care organizations (Berwick *et al.*, 2005). Nevertheless, no consistent method for implementing healthcare process management has become a *de facto* reference method. Furthermore, domain inherent aspects, such as content and structural characteristics are mostly not considered in common frameworks or practical approaches. Still ongoing, each country explores and tries

to learn from their experiences, and the experiences of other countries. This is the focus of our current research, in which we aim to develop a framework for designing and introducing healthcare processes. As a first step, in this paper, we analyze a prominent system implementation in Ireland. We focus on managerial and domain inherent factors.

The paper is structured as following: section two describes business processes and IS. Section three describes and provides the research approach, which defines important terms. The evaluation framework for introducing BPM in healthcare is defined in section four. Section five of the paper describes the healthcare reform programme in Ireland, followed by presenting our research results and the analysis in section six of the paper. Section seven concludes our paper, outlines limitation of our research and details the need for further research in this area of process management.

Business process and IS

To make organizations more efficient, a frequent element of many current approaches is the concept of (business) processes (van Rensburg, 1998). This is often seen as one of the core elements to improve the organizations' performance. Literature provides various definitions for (business) processes (Armistead *et al.*, 1999; Larson and Björn-Andersen, 2001), hence we need to clarify our understanding used in this paper. Our work is based on two widely adopted definitions on design and management of business processes (Malhotra, 1998; Larson and Björn-Andersen, 2001; Reijers, 2003). Davenport and Short (1990) have defined the concept of a business process as a set of logically related tasks performed to achieve a defined business outcome. Similarly, but emphasizing the client-centered aspect of business processes, Hammer and Champy (1993) have defined business processes as a collection of activities that takes one or more kinds of input and creates an output that is of any value to the customer. It is recognized that there are different types of processes within organizations (Armistead *et al.*, 1999) that include, for example, operational, support, direction setting, and managerial processes.

Processes extend over different functions and encompass suppliers and customers. This makes business process projects complex and difficult. As a consequence, different management practices are required for the successful implementation of BPM as opposed to what is currently in operation. From a research perspective, a formal design and implementation methodology, formal specification, models, and integration architectures are required (van Rensburg, 1998). A critical success factor for implementing business processes is the ability to understand change and its effect across all dimensions of an organization (e.g. the people, resources, processes, and patient/customers) (van Rensburg, 1998). This requires a wider definition of IS. Throughout our work, we define IS as socio-technical subsystems within organizations, which comprise of all information processing activites as well as the associated human or technical actors in their respective information processing role.

Research approach

Our research presented in this paper is based on the PPARS system and intends to use this as a case scenario to identify success factors. This, in turn, forms the basis to propose a conceptual reference method for introducing healthcare process management. Numerous failure stories and earlier discussions with healthcare

professionals are illustrating the need for such guidelines. In order to support this general observation, we conducted initially two interviews with healthcare professionals in 2006. Our preliminary research was completed using a semi-structured interview method in a major teaching hospital in the Dublin area. The aim of these interviews was to raise the awareness for healthcare specific challenges and refine our analysis framework. In addition, in order to reflect our first framework we completed a qualitative- and literature-based analysis of common approaches on process management. Based on the findings from literature and our initial framework based on feedback from healthcare professionals, we developed detailed interview guidelines. Subsequently, we carried out a series of interviews with domain experts from various backgrounds. The interviews were conducted between March and May 2006 and included experts from various areas as shown in (Table I).

The interviews were semi-formal, structured using an interview guideline. The interview guideline was distributed to the relevant interviewees prior to the interview. Following the interview, a written summary was compiled. The interviews were based on different subject areas depending on the interviewee's expertise. The subject areas were indicative.

Financial subject areas:
· Areas/departments of health services involved in payroll processes (e.g. HR and finance) and their role in the payroll process.
· Main activities involved in the payroll process.
· How should/will PPARS change the payroll process?
· Opinion of the PPARS system.
· Main challenges and inefficiencies of the PPARS system.
· Benefits and challenges faced with introducing PPARS.

IT subject areas:
· Overall, architecture of the PPARS system in particular the payroll module.
· Technical specification of the system.
· Problems concerning time management.
· Payroll module interaction with other modules in the system.

Project management and implementation:
(1) Questions regarding the system design:
    · What processes were identified for payroll in the initial design phase of the project?

Interview A	Interview B	Interview C
Health organization that did not implement the system	Health organization that implemented the system	Management group
Director of finance	ICT project manager	Two PPARS project managers
Director of IT	Director of IT	

Table I.
Overview of interviews completed

- Were these processes different than the existing ones?
- Was process simulation used to optimize the processes?
- Outline some example processes.
- Challenges in process re-engineering?

(2) Questions regarding functionality:

- Relationship between payroll and HR functionalities.
- Challenges in customization?
- A key aspect of the system was its in-depth reporting function – has this been successful?
- How does the system support strategic planning in hospitals?
- What changes where made to the processes and activities concerning payroll?

(3) Questions regarding project problems and challenges:

- The payroll module relies heavily on data quality. How has this been assured?
- The key areas of analysing, aligning, cleansing and sustaining – how have these been introduced to manage data quality?
- What changes where made to the processes and activities concerning payroll?
- How have the errors in the payroll module been rectified?
- How has the system been tested, parallel runs with existing systems, etc.?

(4) Questions regarding the project's future:

- What is the plan for PPARS System? What is the current status?
- From a user perspective has feedback been valuable and positive?
- What is the agenda for the future implementations?

The general format of the interviews was conducted in three stages:

(1) History of the project implementation from the interviewee's perspective.

(2) Own experiences, examples and problems with the system.

(3) Opinions about reasons for the main difficulties and project failures.

Framework for analysing business process success
Project failures are associated with two main areas, one being technical in the form of design, modeling, and implementation. Second, project failures are associated as organizational in the form of project and change management issues. There are many studies analyzing success factors for project management implementations (Bashein and Markus, 1994; Paper and Chang, 2005). Often projects are technically driven with no clear and formulated (business) objectives before commencing the actual projects (van der Aalst and van Hee, 2002). However, implementing a new technology will often require the redesign of critical business processes and the alignment to strategic objectives (Ndede-Amadi, 2004). This reiterates the importance of the relationship

between IT and business processes. Experiences, for instance made at the Leicester Royal Infirmary in the UK, demonstrate the sometimes short-term and technical focus (Ferlie and McNulty, 2002). In addition to these general process management challenges, frequent arguments from healthcare professional are related to the specifics in the healthcare sector. Arguments include the variation in hospital processes, time pressure, and lack of resources prevents the introduction of process management. Also, healthcare shows a high degree of specialization and complexity, thus any process management projects will have to actively involve staff from various areas.

In order to assess the success and failure of process management projects and the particular challenges in healthcare, it is necessary to format or develop an evaluation framework. During our research, we build on the work from Larson and Björn-Andersen (2001), which provides an evaluation framework for business process projects. We aim to limit our analysis to some selected evaluation parameters. This selection is based on qualitative assessment of their importance. Based on our initial discussions with healthcare professionals, we categorize common success factors in:

(1) management and methodology factors; and
(2) domain inherent, content and structural factors.

We emphasize to distinguish between these two fundamentally different aspects of process management projects. One concerned about managerial aspects, such as project planning, the project organization, project measurement, and control. The second aspect is concerned with domain inherent aspects including domain content and structural factors. These domain inherent elements are usually described through models or architectures. Change manage affects the IS architecture in form of IS, organizational structures and organizational processes. Therefore, change management affects domain inherent elements (Table II).

Management and methodology factors
The management of a project is important, particularly for modeling projects. Since the classical tasks of project co-ordination are supplemented by defining models and implementing changes, the management is a significant factor. Literature provides us with various suggestions that help to introduce process management projects (Brigl *et al.*, 2005; Becker *et al.*, 2003; Teng *et al.*, 2000). Similarly, software engineering has developed numerous models, which support the total life cycle of IS. Popular examples of procedural models are for instance the "waterfall model" (Royce, 1987) or the "spiral model" (Boehm, 1987). Typically, suggestions for business process projects include phases such as (Becker *et al.*, 2003):

Management and methodology factors	Domain inherent: content and structure factors
Project planning	Domain specific: as-is process and organizational model (current IS architectures)
Project organization	Domain specific: to-be process and organizational model (intended IS architecture)
Measurement and control	Migration and change management plan

- pre-study and planning phase: model focus; modeling methods and tools, software selection;
- defining the strategic context;
- as-is process design;
- to-be process design;
- designing the organizational structure;
- implementation and migration; and
- feedback and continuous improvement.

An important aim of any health process management project is to promote an integration of administrative and medical functions throughout the hospital. Most authors state from a perspective of project organizations that top management support and commitment are vital, thus resulting in projects which are carried out in a top-down participation. However, the participation and acceptance at an operational level are also essential for the success of the project. The process owners should be involved in the design and modeling phase of each of the processes. In addition, since the degree of specialization and complexity within healthcare is high, teams should comprise of experts with skills from each business unit, which in turn promotes knowledge sharing and communication.

In order to plan, control, and audit the project progress and resource spending (costs and time), goals and measurements are essential. Both strategic aims for the project and project-specific aims should be factored. Some typical aims of a health process management projects may include: information quality improvement; healthcare performance indicators; smoother flow of patient care, reducing waiting times and backlogs for patient treatment; decreasing variation in patient care; improve the working environment; and better co-ordination of care capacity and demand.

Domain inherent: content and structural factors
One of the main aspects and activities carried out in early phases of process management projects are processes modeling. Typically, process models are described as as-is and to-be models. The models contain activities and organizational structures as well as the process dynamics (also called IS architectures, which describe the static and dynamics between different views: people, resources, processes, and customers). Research provides a number of various models, such as organizational models, process models or data models. The models can be specified using various modeling languages, such as event-driven process chains or entity-relationship models. Different alternatives should be assessed with respect to project and organizational aims. The quality of models can be evaluated using modeling guidelines, for example, as proposed by Rosemann (1998). Criteria may include correctness, relevance, economic efficiency, clarity, comparability, and systematic design.

There is a close relationship between business process design and business process modeling, where the former refers to the overall design process involving multiple steps and the latter refers to the actual representation of the business process in terms of a business process model using a process language. For example, the common outcome of the PPARS project was documented with business process models. Modeling languages and techniques, demonstrated by Unified Modeling Language,

entity relationship modeling and event-driven process chains building generic constructs for modeling human roles, processes, and technologies. In practice, the building of these models is supported by process engineering tools (e.g. ADONIS or Architecture of Integrated Information Systems), which implement the methodology and modeling language. Consistency between the design methodology and models are ensured via meta models.

Finally, the designed process and architectural models are implemented as a particular operational system for production and coordination (e.g. real world healthcare system, which includes the IS elements). The implementation aspect is usually referred to as migration or change management plan.

The healthcare reform programme in Ireland

In response to the challenges in healthcare, many countries have initiated strategies to improve their health information capacity by addressing two main objectives: first, to improve the quality of care; and second, reducing the cost of its provision. In Ireland, a series of strategy documents were published over the last decade, with the latest in 2004: The National Health Information Strategy (Department of Health and Children, 2004). It aimed that this strategy should lay the foundations for the future of health ISs in Ireland and provide for more accessible and comprehensive information across all areas of health. Along with its implementation, a significant increase in funding for health IS could be expected. However, these strategies are often prone to failure when implementation is attempted (Hackney and McBride, 2002).

One of the systems along the healthcare reform programme is PPARS. The system was originally initiated in 1995, with an official launch in 1998. It was due to be completed in December of 2005, with the aim to standardize and integrate the HR management and payroll of each health board and health provider in Ireland. Each board and provider was responsible for and carried out their own HR and payroll function. This situation increased significantly the need for such a system. Most of the personnel and payroll processes were labor intensive with a high degree of manual involvement and diversity. The vision was to provide an integrated HR system which incorporated payroll, attendance and time management. On a technical level, the system is based on SAP R/3, a standard enterprise resource and BPM package. R/3 is modular oriented and provides standard (reference) process models for various business functions, for example sales, materials management, production, finance, accounting, quality management, and HRs in an enterprise.

In an earlier phase, the system has already been implemented in a selected number of agencies (Department of Health and Children, 2004). However, recently the PPARS project attracted a large media attention for the reasons of budget overspending and problems with the project. The project led to a considerable amount of reports and presentations concerning the system, for instance a presentation by PPARS project mangers at the Second Information Quality Forum in Dublin on October 13, 2005. An analysis of some aspects on the PPARS project management is provided by McDonagh (2006). Two common problems seem to be mentioned in most of the reports and evaluations:

(1) The high level of variances and diversity in payroll standards, regulations and processes throughout the entire healthcare sector. For example, most healthcare providers and even single departments adapt, interpret or specify own payment rules or payment allowances.

(2) Poor project management and process flow as well as problems with keeping ahead with changes in the organizational environment (HR recruitment and high-staff movement) are mentioned in most reports.

Research results

The following sections contain a summary of results from the interviews with experts involved in the PPARS system implementation. Our qualitative analysis revealed interesting results. The interviews provided a valuable insight into the challenges in the system and a broader understanding of the processes involved in regard to payroll. A summary of the interviews is provided in Table III.

From the interviews, we can characterize the project in essence as a technical oriented rather than process-, managerial- or organizational-driven project. The major challenges are rather content and structural in nature then solely in project management-based issues.

Management and methodology factors

Generally, inadequate project management is often stated as reason for project failures. For the PPARS project, the project management was mainly carried out by an external consultancy organization with large experience in managing projects to redesign or introduce business processes. Typical problems with project management stated in the interviews for instance were: inexperienced employees, week governance, or time pressure during the pilot test phase. Also, some interviewees mentioned that clearer

Interview A: director of IT	This interview provided information regarding the history of the system. Instead of paying employees their usual salaries monthly, payments had to be fortnightly in order to accommodate the PPARS system. Insight was given with regard to the functionality of the system from an IT perspective
Interview A: director of finance	This interview provided insight into the approach for the implementation of the system within this particular hospital. The areas of functionality and requirements needed within the system were discussed. Issues were raised with regard to customizable features as well as the underlying concern of large variances. The area of performance strategy was also discussed
Interview B	Issues discussed included the roll out of the system, the problems occurred, the change management approach and the benefits of the system. The HR module of the system has brought the HR department from being paper based to electronic. In order to limit the number of variances, certain processes were adopted. The payroll had been 98 percent accurate in the first three months. This interview gave an insight into the detail of the system implementation
Interview C	HR aspects were underrepresented in the health service. Main areas of time management and the difficulty of managing this within the system were discussed. The interview provided key information on the system design and the project roll out

Table III.
Summary of interviews completed

objectives and measurements concerning common payroll processes for all health providers were required.

The interviewees also mentioned the problems of not having a clear design phase with a stable requirement and functional description. Functional requirements and scope were changed during the project implementation. Time pressure and unclear resources were also a factor. As with many public projects, funding was often uncertain. This resulted in frequent short-term arrangements and contracts. However, these arrangements are usually unsuited for a project of this scale and duration. Despite the many contracts and external agencies involved, the project lacked a clear quality assurance along the project duration. The quality assurance should ensure that the requirements and scope are properly defined and that the business case was appropriate for the project.

Domain inherent: content and structure factors
The key area of concern was time management and the large amount of varying differences in the healthcare environment. The interviews provided some interesting examples of the challenges related to the healthcare payroll system. Examples included:

- A theatre nurse is allocated to another ward. The general payment rules of the hospital require to pay the nurse theatre allowances for the whole shift (including the time in the ward). However, the PPARS rules would only allow that the nurse is paid normally while working in a ward. The theatre allowance can only be paid for actual time spent in the theatre.

- Requirements in the health service are based on demand, which can have high variations: a key example is the number of critical cases on a ward determines the number of staff needed. These figures change daily with high variations.

- Different shift patterns are applied in different health organizations.

- The management of sick days: a developer described the systems ability to count the sick days. However, a very simple issue of being sick on Friday could not be dealt with. In an initial version, the system would count the days at the weekend as sick leave.

- Different health boards employ and pay ambulance drivers with different terms and conditions. The PPARS system did not allow for such variations in payment terms and conditions.

These content and structural issues seem to be a unique problem, specific to the healthcare domain. As the health service is (still) mainly paper based and sometimes poorly organized, modeling As-is processes and structures were challenging or even impossible. The required time in the health service is based on demand for care, resulting in high variability. A key example would be the number of critical cases, which then determines the number and qualification of staff needed. The figures change daily with a high degree of variability. Also, different payroll regulations, time management procedures and shifts are applied in different health organizations (e.g. over time and sick leave). The attempt to standardize these procedures revealed another problem. Individual interpretation of regulations and definition in payroll were common. Different interpretations of the health care paying rules were being

implemented in each separate organization. This led to the realization of errors being made within the health service in addition to restricting the ability for organizational change. Obviously, these regulations and procedures were not standardized prior to the PPARS system approach. The large number of variations resulted from the independence of the health providers. Variations exist between the organizational structures, cultures and processes, as well as the agreed rules in pay and conditions. Some of these variations could be explained by the independence of the providers; however others resulted from different interpretation of rules and procedures.

The specific challenges in the (Irish) healthcare sector, made the modeling of realistic to-be processes and structures extremely complex. On the one hand, the incorporation of all variances was infeasible from a system point of view. The system was regarded as being "inflexible." On the other hand, the standardization of all payroll processes, terms, and organizational structures requires a large reorganization and change management project of the payroll organization. Indeed, the proposed payroll procedures needed changes in the work processes and schedules. However, this was not complete prior to the project start and even during the implementation phase certain processes were frequently "changed before going live." Staff training was sometimes behind the system implementation. As result, at times line managers were not aware of the new procedures and had to consult IT personal to explain regulations already implemented. Generally, the interviewees felt that there was not enough focuses on managing the required changes to implement standard processes.

Conclusion and further research

Health process management provides continuous improvement in streamlining the healthcare environment, delivering better quality and reducing costs. However, projects to implement a single system in a non-standardized environment are challenging and often fail. Healthcare providers and agencies are often independent with different cultures, organizational structures and processes. This paper described the results towards implementing guidelines for introducing healthcare process management. Numerous failure stories and earlier discussions with healthcare professionals are illustrating the need for such guidelines. This paper describes results from analyzing a national project in Ireland, which aims to be a standardized healthcare HR and payroll system for the Irish healthcare sector. The project was particularly complex as every project participant stated new and particular requirements and revisions to functions and processes. The project exceeded the projections in terms of financial resources and duration.

A plethora of research exists related to BPM. Researchers have proposed frameworks and investigated success factors. Also, a variety of case studies are documented in literature outlining best or successful practice of BPM in single organizations. Despite the number of case studies documented, most frameworks emphasize on project management factors. With this contribution, we aim to show that domain inherent challenges might be a significant contributor to success or failure of projects.

Our research centered on a large-scale and national BPM project and aimed to investigate managerial and structural challenges during the implementation. Voss and Huxham (2004) state that it is hard to find an organization that is explicitly trying to reengineer its processes. As the project includes several organizations, it proved to be a valuable case scenario revealing the following results. Our results show that

introducing standard processes in the healthcare environment can be challenging. Failures in healthcare are often content and structural in nature and problems are often particular to the healthcare domain. Project management issues are also in existence; these are common to other domains as well. Indeed, time management in healthcare is where most errors and challenges occurred. This resulted in variances and the diversity of specific terms and conditions (mostly due to individual interpretations). Some reasons for the project failure are due to the time pressure and lack of detailed change management. Indeed, changing the organizational structure from an agency (distributed) approach to a national level is a demanding and complex project.

However, while our research is based on a single case study, and is limited by the participation of healthcare professionals and the level of details available we believe that our research revealed an interesting finding: content and structure are more important than project management issues. Even if this finding is only based on limited experiences in some selected organization, our result has practical implications for other enterprises. The finding highlight the importance of structure and content, and thus BPM project require a thorough understanding of the domain issues. While many consulting companies offer expertise in the management of business process projects, domain expertise and the knowledge of particular issues in the organizational environment are crucial. As our example show, to neglect these domain specific issues can lead to failure or inefficiencies of introducing BPM. In a broader context, our results show that change management are fundamental for BPM.

Based on the research presented in this paper, we plan to develop a comprehensive method or guideline to introduce BPM in healthcare. In addition to other frameworks, we aim to include the consideration of domain specific issues (content and structure). In essence a method can be described as a set of steps (an algorithm or guideline) used to perform a task. "Methods are goal directed plans for manipulating constructs so that the solution statement model is realized" (March and Smith, 1995). In order to ensure that we develop a consistent method, we follow the principles of method engineering as proposed by Gutzwiller (1994). The objective is to define a sequence of design activities that produces one or more result documents (e.g. healthcare process models), and thus define a design process method. In order to ensure consistency among the models, the methods are based on a meta model approach, in turn defining the elements and their structures, relationships at specific levels of abstraction.

Although this paper provides some interesting results, the research has also its limitations. Indeed, our conclusions are based on a single case with a limited number of interviewees and detail. Therefore, the results and the conclusions are subjective in nature. The observations might be influenced and extended by the experience and observations of the researchers. To address these limitations, in our future research, we will extend and detail our analysis further. We plan to investigate similar projects in other European countries, and compare the results. Also an extended and longitudinal analysis should be carried out to confirm our results presented in this paper. Further empirical research on failures and challenges are necessary and more details are required to refine our proposed evaluation framework and to achieve our goal of defining a comprehensive reference design method for introducing healthcare processes. In this context, the consideration of change management issues in relation to business process project, could be an interesting study in a broader context and should be subject of further research.

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