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Case E-Banking Service

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Abstract

In this interpretive case study, we explore how user feedback management and other idea generation methods, information system and new service development processes are integrated in a large scale e-banking context. E-service development should be a constant process enabled by a continuous flow of new ideas for improving the existing services and for developing new ones. Open-ended, textual user feedback that is mostly received unsolicited from ordinary people is strategic for continuously gaining user opinions and expectations on the total offering and service quality. Based on our empirical data, we develop an e-service development model that covers the investment lifecycle from ideas and innovations to launch and abolishment and all levels of planning. The integration of idea generation, information system and new service development processes together with the supporting information systems enables the utilization of the ideas found. The model facilitates the ongoing involvement and influence of heterogeneous users throughout the system lifecycle and helps organizations develop services that continuously provide sufficient service quality and meet the changing needs and desires of a single user, thus ensuring competitive advantage and customer retention also in the long run.

Keywords – *user feedback, idea generation, information system development (ISD), new service development (NSD), integration, e-banking service*

1 INTRODUCTION

In many industries, even the core processes are nowadays partly or fully available electronically, e.g. e-booking of travels, hotels, and events, e-shops for both physical and digital goods, e-logistics, e-check-in, e-payment, e-invoice, and e-banking, our case web-service. Many traditional face-to-face or phone services have been transformed into on-line self-services. These web-based information systems (WIS) or e-services affect many stakeholders and users from within and outside the organization (internal employees, external organizational and personal users) (e.g. Markus and Mao, 2004; Ramler et al., 2004). Oftentimes ordinary people are the largest user group of WIS. Thus, the users are heterogeneous in many respects (e.g. education, culture, ethnicity, age, computer skills, financial needs, expectations, and perceptions) and the service provider cannot directly reach or control the users (Markus and Mao, 2004; Ramler et al., 2004). If the portal does not provide sufficient service quality or meet the needs and desires of a single user, it is easy for an external user to switch the service provider rather than return to using the traditional service that may still be available, but is often made difficult to attend or expensive to use.

Listening to the voice of the customer (Berry and Parasuraman, 1997; Griffin and Hauser, 1993) or user (used interchangeably in this paper) has become ever more important for organizations for the further development of their WIS. The web and the online service itself provide an excellent means for continuously reaching and involving heterogeneous users and for gaining insights on their current and future needs (Floh and Treiblmaier, 2006; Prandelli et al., 2006). In addition, various channels and tools are used for soliciting feedback and made available for giving unsolicited feedback on the total offering and the organization (see an extensive literature review on user feedback management in Merisalo-Rantanen et al. (2009)). Yet, the back-end of the feedback management is complex. The unstructured, textual nature of open-ended feedback makes it difficult to analyze and utilize it. (Ramler et al., 2004; see also Pavlou and Dimoka, 2006; Prandelli et al., 2006).

From the service provider's viewpoint, the web-service or portal is a combination of various front-end and back-end information systems (IS) although the users see it as a single service or WIS. These numerous IS are in different phases of their lifecycle and under continuous development and improvement (evolutionary or incremental

development). Outdated IS are replaced with new ones and totally new IS are regularly included into the portal (radical, discontinuous development). WIS development (WISD) is not a one-time event but a process with a long lifecycle. (Ginige and Murugesan, 2001) To be able to manage the fast-pace evolutionary WISD, organizations have adopted agile information systems development (ISD) methods (e.g. Abrahamsson et al., 2002) but also more formal WISD processes as suggested in the field of Web Engineering (WE) (Murugesan and Ginige, 2005). However, WIS are not only information systems but also services. Hence, the fields of ISD and new service development (NSD) are complementary and relevant to WISD. Gaps in the literature in one domain can be bridged by drawing upon the research in the other domain. (Nambisan and Wilemon, 2000; see also Nambisan, 2003; and Menor et al., 2002) (NSD is often, also in this paper, used interchangeably with new product development (NPD).)

In this interpretive case study, we explore *how user feedback management and other idea generation methods, information system and new service development are integrated* in a large scale e-banking service context. We aim at discovering the processes, key actors and supporting IS of these processes. Unlike the traditional project-based ISD, WISD should be a constant process enabled by a continuous flow of new ideas for improving the existing services and for developing new ones.

As the result, we develop an e-service development model that covers the investment lifecycle from ideas and innovations to launch and abolishment and all levels of planning. The integration of idea generation, ISD, and NSD processes together with the supporting IS enables the utilization of ideas found in user feedback management and other idea gathering methods. The model facilitates the ongoing involvement and influence of heterogeneous users throughout the investment lifecycle. The adoption of the model also helps organizations develop IS, WIS, and even products and services that continuously provide sufficient service quality and meet the changing needs and desires of a single user.

This paper is structured as follows. Next, we briefly review the related literature on WISD. Thereafter, we present the methodology of the study and the case description. Finally, the results are discussed and conclusions are drawn.

2 RELATED RESEARCH ON WIS DEVELOPMENT

The advanced web-based applications like our case e-banking service differ from simple, e.g. purely informational WIS, by their large volumes of information, dynamic web pages, integration with database and other similar systems, vitality in user satisfaction, and preparedness for seamless evolution (Deshpande et al., 2002). Ginige and Murugesan (2001) characterize advanced web-based systems as 1) having complex web pages, 2) changing with time and users' needs, 3) being difficult to navigate and find information, 4) being integrated with database and other planning, scheduling, and tracking systems, 5) requiring high performance and continuous availability, 6) requiring a large development team with expertise in diverse areas, and 7) being deployed in mission-critical applications.

High-quality web systems are central means to gain sustainable competitive advantage. The quality of WIS is defined in terms of functionally, usability, content maintainability, performance, and reliability. WIS must be maintainable and scalable to be able to evolve. Moreover, "The problems on the web become quickly visible and frustrate the users". (Murugesan and Ginige, 2005) Users should be directly involved in ISD and NPD from the beginning to the maintenance stage (Ramler et al., 2004; Magnusson et al., 2003; Hsieh and Chen, 2005). According to Alam and Perry (2002), it remains unanswered how to involve customers in NSD. Web tools (Prandelli et al., 2006) and user feedback during ongoing use enable the continuous indirect involvement of these users in WISD throughout its lifecycle (Ramler et al., 2004).

However, according to Menor et al. (2002), little research exists on how Internet-based services should be developed. They question whether a totally new NSD process for Internet service exists. Moreover, Yang and Tang (2005) argue that there is lack of studies that investigate the importance of developing WIS that meet the demands of those who use them. According to Fuccella and Pizzolato (1998), in reality, "real" online users have seldom been requested to participate in WISD. They continue that few publications discuss effective methodologies for integrating user-centered design into the overall web design process.

2.1 ISD and NSD Characteristics

As WIS are IS-based services, their development is not solely ISD or NSD but both. Sawyer et al. (2010) even characterize ISD as a form of NPD. Hence, the fields of ISD and NSD are complementary and can learn from each other. Gaps in the literature in one domain can be bridged by drawing upon the research in the other domain. (Nambisan and Wilemon, 2000; see also Nambisan, 2003)

Formal ISD and NSD processes and their stages are alike. Large organizations oftentimes use formal, sequential and bureaucratic NSD processes that are efficient to manage and to which they are accustomed. Smaller organizations might have a more informal NSD process with more parallel stages. (Alam and Perry, 2002) There is an extensive literature on ISD, WISD, NPD, and NSD from various viewpoints. Just a few examples are presented in Table 1. This list is by no means comprehensive, but gives some insight and clues for finding further reading.

Table 1 Examples of literature reviews on ISD, WISD, NPD, and NSD

Topic	Study
ISD methods and approaches	e.g. Avison and Fitzgerald (2003) and Merisalo-Rantanen et al. (2005)
WISD methods and approaches	e.g. Murugesan and Ginige (2005) and Bragge and Merisalo-Rantanen (2009)
NPD models and methods	e.g. Brown and Eisenhardt (1995)
NSD models and methods	e.g. Johne and Storey (1998) and Goldstein et al. (2002)
Differences between NPD and NSD	e.g. Nijssen et al. (2006), Alam and Perry (2002), and Menor et al. (2002)

ISD and NSD share the same crucial problems of rapid, evolutionary development of products and services together with heterogeneous users and customers for meeting their diversified and constantly changing needs. However, the focus of the ISD and NSD processes is different along the technology-process-people triangle. In IS, mostly the process and technology dimensions are scrutinized whereas in the field of marketing, more attention is paid to people and process dimensions. (Nambisan and Wilemon, 2000; see also Nambisan, 2003)

Both ISD and NSD domains increasingly share a common theoretical foundation of innovation management (Nambisan and Wilemon, 2000). Innovation efforts are founded in the consideration of customers, competitors, and market possibilities (Menor and Roth, 2008). According to Brown and Eisenhardt (1995), innovation research splits into two

areas: the first, an economics-oriented tradition, examines the patterns of innovation and the second, an organizations-oriented tradition, focuses on how specific new products are developed. The innovation process consists of the front-end, i.e. the ideation and innovation, and the back-end, i.e. the actual development of the product or service. Unsolicited user feedback represents one form of continuous open ideation and innovation in the front-end whereas ISD and NSD are approaches to the back-end of the innovation process. (see Menor and Roth, 2008; Oke, 2007; Gassmann et al., 2006) Thus, an effective and efficient feedback management process integrated in WISD process is the key enabler of their successful and continuous development. An institutionalized, completely integrated feedback management system (FMS) enables continuous learning, improvement in service quality and productivity, and process redesign by systematically collecting, analyzing, and disseminating various types of user feedback (Fundin and Bergman, 2003; Wirtz and Tomlin, 2000).

However, successful practice examples for actively managing the innovation front-end are missing (Gassmann et al., 2006). When offering multiple channels and tools for feedback, organizations expose themselves to huge amounts of unstructured data that is useless without scalable knowledge management methods, processes, IS, and people (Romano and Fjermestad, 2003). This feedback may provide an explanation why a user is unsatisfied and what to improve (Wirtz and Tomlin, 2000). Wishes and needs for new solutions and attractive products for both current and future customers should be found in the feedback, and further transferred throughout the organization (Fundin and Bergman, 2003). In many cases, no formal structure exists in organizations to transfer customer complaints into the ISD and NPD processes (Fundin and Bergman, 2003; Geib et al., 2005). According to Romano and Fjermestad (2003) and Pavlou and Dimoka (2006), the role of textual feedback comments is mostly ignored in the literature.

2.2 WIS Development

The development of high-quality WIS is a challenging task where many continuously evolving and even conflicting requirements, wishes, and limitations must be taken into regard. The WISD process must enable fast-pace evolutionary (incremental) as well as new WIS development and facilitate continuous user involvement for proactively developing the total offering. The development of large, complex WIS involves planning, web architecture and system design, testing, quality assurance and performance

evaluation, and continual update and maintenance of the systems as the requirements and usage grow and develop (Murugesan and Ginige, 2005). The main driver of the evolutionary WISD process is continuous user involvement (Ramler et al., 2004).

WISD is not a one-time event of ad-hoc development, but an iterative, evolutionary process with a long lifecycle (Ginige and Murugesan, 2001; Ramler et al., 2004; Murugesan and Ginige, 2005). After the deployment, content maintenance is a continual process. Shortcomings and weaknesses must be fixed. The WIS also needs to be updated and occasionally redesigned to meet the growing and evolving requirements and the constantly changing structure and functionality of the system. (Murugesan and Ginige, 2005) Ramler et al. (2004) classify maintenance as corrective, preventive, adaptive, and perfective. Conventional maintenance is by nature corrective, i.e. fixing bugs and design deviations that have occurred, and preventive, i.e. trying to avoid these problems in the first place. Evolutionary development, on which we focus, is characterized by adaptive maintenance, i.e. some change in the environment of the system occurs (e.g. a new web browser is released) and perfective maintenance, i.e. introducing enhancements (e.g. new functionalities) or increasing the efficiency of the IS. (Ramler et al., 2004)

Murugesan and Ginige (2005) recommend an evolutionary process for WISD. The iterative process with feedback loops starts from the contextual analysis for gaining understanding about the deployment context, and proceeds through the architecture design, process model, project plan, and web site development to the evaluation and maintenance of the WIS. Supporting processes comprise project management, quality assurance, and documentation. (Murugesan and Ginige, 2005) This evolutionary process provides a good framework for WISD in general, but does not give guidance on what methods and tools would best suit WISD, how they could be integrated, and how to make the feedback loops work.

According to Ramler et al. (2004), a web development process must provide 1) the involvement of actual heterogeneous and even unknown end-users, 2) prototyping for leveraging continuous user involvement, 3) change management by establishing a single channel for change requests and a control board for priorization, 4) immediate response to user feedback and market situations, 5) risk minimization by adopting project management and user feedback utilization, 6) no administrative overhead by using lightweight and agile

approaches, and 7) transparency and overall guidance by defining and aligning the long-term goals and business goals of the development project.

For the fast-pace WISD, Ramler et al. (2004) propose the adoption of agile ISD methods (see e.g. Abrahamsson et al., 2002; Boehm and Turner, 2003; Cockburn, 2002). Agile software development methods can be defined as using human- and communication-oriented rules in conjunction with light but sufficient rules of project procedures and behavior (Cockburn, 2002). These four rules are: individuals and human interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan. Agile methods emphasize the soft or human side of software development over the institutional aspect as well as communication and programmers' morale. Agile methods focus on people as the primary drivers of development success (Conrad, 2000).

Prototyping is an efficient way to involve users throughout the WIS lifecycle, regardless what development approach is adopted (Ramler et al., 2004; Conrad, 2000; Magnusson et al., 2003). The use of the existing IS provides the users factual knowledge about a technology and enables them to gradually convert the knowledge from factual into more contextual (Nambisan et al., 1999). In the evolutionary development or maintenance phase, the implemented software may be regarded as a prototype that stimulates the users to participate and ideate via feedback. The "prototype" triggers the users to see the possibilities of the technology, to solve problems they face, and, thus, get new value-adding ideas. (see Ramler et al., 2004; Magnusson et al., 2003; Kristensson et al., 2004; Nambisan et al., 1999).

3 RESEARCH METHODOLOGY

In this research, we explore *how user feedback management and other idea generation methods, information system and new service development are integrated* in a large scale e-banking service context. Our objective was to understand the integration of user feedback and initiatives in WIS development. The nature of our research problem, human behavior and interaction, led us to use a qualitative approach (Seaman, 1999). We turned to the case study approach that Wynn (2001) has advocated as the most appropriate qualitative method for studying social processes and gaining a deep understanding about a phenomenon. In the case description, we adapted the principles of interpretive case studies: reporting details of the selected research sites, the reasons why these sites were

chosen, the number of people interviewed, the interviewees' hierarchical or professional position, secondary sources of data, the data gathering period, how field interviews and other data were recorded, the description of the analysis process, and finally, how the iterative process between field data and theory took place and evolved over time (Walsham, 1995; Walsham, 2006).

As the main data collection method, we applied semi-structured thematic interviews. We conducted eight interviews with seven interviewees between 2002 and 2004. A summary of the interviews is presented in Appendix 1. We have categorized the interviews into three data sets that describe the data collection and analysis process: Getting the "big picture", Drilling down to feedback, and From IT to business. The questions of the semi-structured interviews are available from the author on request.

All interviews were recorded and transcribed, and the interviewees also validated the memoranda. Later on, the data were complemented by telephone discussions and e-mails if necessary. We also reviewed written documents, the organization's web site, and other complementary information related to the case organization and its e-banking service. In addition, we have experience as users of e-banking systems, which helps us better understand the case at hand.

4 THE CASE UNDER STUDY

The case organization is a multinational portfolio type of company in the financial services field. The company has experienced many structural changes during the last decade. The number of employees has grown to well over 30,000. The company is a leading financial services group in its operating area with over 10 million customers internationally. Our research was conducted in one operating country that leads the development of group-wide IS and processes. The case country also represents a "test lab" where novelties are first implemented.

The case organization's web portal allows access to several cutting edge financial products, services, and solutions within banking, asset management, and insurance. It is a combination of many integrated front-end, back-office, and legacy software applications seen by users as a single system providing full e-banking functionality. These systems are in different phases of their lifecycle and the portal is under continuous major and minor renewal. At the time of the field research, the software tool for content provision and the

actual content with the layout and structure had just been renewed, and a major effort for renewing the e-bank was ongoing.

Several mergers have made the information systems architecture dispersed. The integration and renewal of IS on the group level are in progress. However, this integration is a matter of years, since both operational and supporting IS are numerous in different countries. Also the processes are continuously renewed, integrated, and adapted both group-wide and locally, yet striving for group-wide uniformity.

The portal's e-customers represent a wide variety of users internationally (internal users, personal and corporate customers, and other external users, both identified and unidentified). General information and an e-marketplace are available in the portal without logging in, whereas registration is required to access the e-banking service.

5 CONTINUOUS DEVELOPMENT OF THE CASE E-BANKING SERVICE

Open-ended, textual feedback and initiatives received mainly unsolicited and WIS development were our main interests when gathering the empirical data. Our case, a large-scale e-banking service, provided an excellent context for the research and rich information on the evolutionary development of the service. Based on the data, we construct an e-service development model that is portrayed in Figure 1. The model covers the e-service lifecycle from idea generation to ongoing use and maintenance.

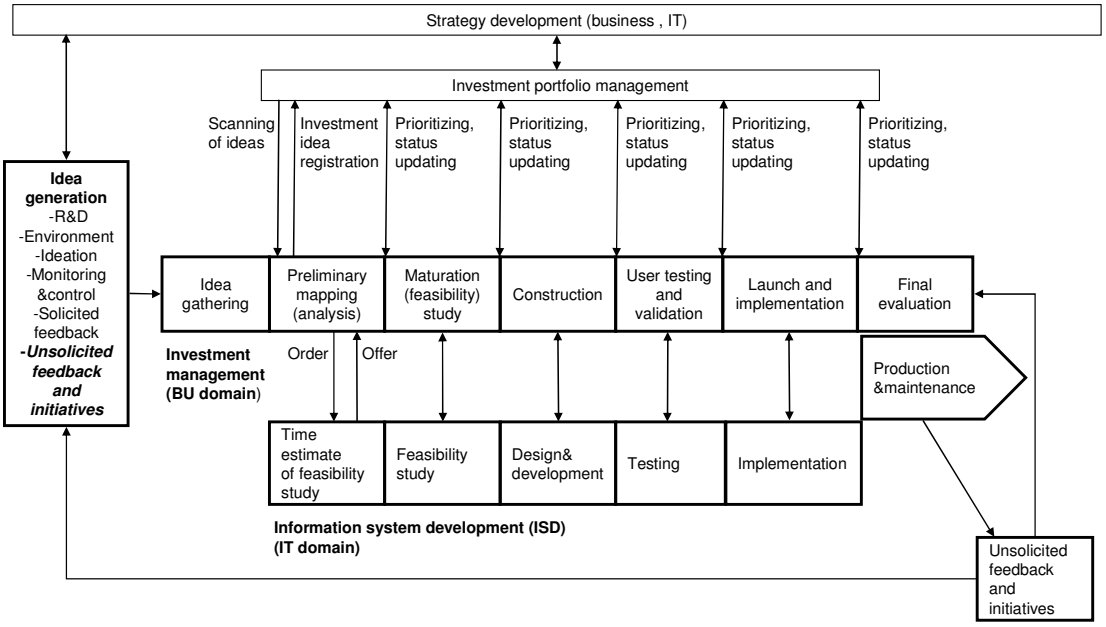

Figure 1 E-Service Development Model

Next, we explain in detail the elements of the developed model. We briefly depict the main idea generation methods focusing especially on unsolicited user feedback and initiatives. Thereafter, the actual WIS development process with the processes, key actors, and supporting IS is explicated.

5.1 Idea Generation

Multiple communication channels and instruments, both online and physically in the branch offices, are used for interactions and made available to the internal and external customers and users of the products and services offered. Systematic R&D and innovation, monitoring and control, and both solicited and unsolicited feedback and initiatives are applied in the idea generation. These idea generation methods are briefly discussed next.

Systematic R&D and innovation, e.g. scanning global, local, and industry-wide trends, weak signals, novelties, and trial projects, is the main source of new major innovations. Both business and IT strategies are taken into regard in this work that, in turn, may affect the strategies. *Ideation* is sometimes used both internally and with external individuals. Internal brainstorming has also been experimented but not found very successful, maybe due to the fact that ideation was difficult when employees were taken away from their normal work environment.

Monitoring and control is accomplished in the same way during the development and production and maintenance phases. Country-specific reporting and control systems (see Appendix 2) help monitor costs, working hours, and hardware and software resources on a project, investment, and investment phase level. They give information on the usage and technological aspects of an IS (e.g. clicks, response time, disk space usage, memory usage) both during the development and in the production and maintenance phase. System work and hardware resource (mainly processing and storage) costs as well as the overall situation are also regularly monitored throughout the investment and system lifecycle. Both solicited and unsolicited internal and external *feedback* are of the utmost importance in monitoring the successfulness of an IS, product or service.

Feedback is solicited yearly from internal and external users and customers using traditional feedback gathering methods like customer satisfaction surveys, market researches, and working environment analyses of the personnel. The objective is primarily to control the service quality, the impact of an implemented change or a new feature e.g. in

the e-banking service, and work conditions. Additional ad-hoc market researches are done and pop-up questions are used for specific purposes, e.g. concerning new products or major changes. External market research organizations usually conduct this feedback gathering and its preliminary analysis. The main channels are open web pages or the e-banking service, depending of the topic and the desired sample. A paper form is usually available in the branch offices or posted to the selected participants. Feedback solicitation using traditional feedback gathering methods is the means to reach especially those customers who are not willing to give feedback unsolicited, on their own initiative.

Unsolicited, open-ended user feedback and employee initiatives originate either from the business or information technology domain, but they often relate to both simultaneously. Major part of feedback and initiatives concerns the e-bank along with service quality in branch offices and contact centers, and open web pages. The main topic of initiatives is also the e-bank along with funding, customer service and marketing, and internal support services. *Direct* feedback is received from the submitter via an electronic feedback form or closed email in the e-banking service or feedback is *mediated* by contact centers and other personnel. The total amount, at the time of the research about 10,000 yearly, is regarded as rather small, compared with the number of users. Most external feedback is received from identified personal users. The feedback is mainly complaints and other communication, and less than 500 items may be regarded as new development ideas. However, various experts among the customers may give extremely profound and useful feedback. Unsolicited feedback also gives insights to the opinions and trends of existing and future customers and is extremely valuable for gaining more satisfied customers and better service. (See Merisalo-Rantanen et al., 2009 for further details on feedback and initiative management.)

Unsolicited employee initiatives present explicit, innovative, and novel development ideas with a draft for a solution and benefits expected. Employees fill in an electronic initiative form in the Intranet. The total number of initiatives was about 1,500 yearly at the time of the field research, of which 1,300 were regarded as new development ideas. About 100 new ideas were rewarded, whereof about 40 were granted an extra pay. The employees are a valuable source of innovation, because they use the services both at work and as external personal users and, thus, are able to consider and understand the wider contexts. (See Merisalo-Rantanen et al., 2009 for further details on feedback and initiative management.)

5.2 Investment Management Process

Many group-wide and country-specific IS support the actual development work and decision making, and help control the investment process (see Appendix 2). The *group-wide investment portfolio management system (IPMS)* is central in managing the investment process and communicating the status and details of an investment throughout the group management. It is the key enabler of the fit between the strategic and tactical levels of planning. Both approved and dropped out investment ideas and proposals are available for reading to the personnel in IPMS as examples. The *group-wide web content management system* contains work instructions, forms, and other information for various purposes, also regarding the investment management lifecycle and its various phases. The *group-wide document management system* with its project database is central to the internal communication and collection of feedback on the development projects. It is especially important in managing cross-border projects. Read-only rights on a project's documentation are granted on request.

The actual *strategy development* process is outside the scope of this paper. However, all new system development initiatives originate from business strategies, which contain strategic focus areas and targets that are, to an extent jointly with IT, converted into a development program, a consolidated information systems strategy. It paves way to the system portfolio development that is launched over the annual planning horizon resulting in a strategic information systems plan, a set of desired systems. All procurement related decision-making is based on both business and IT strategies.

The *tactical level planning* brings together the issues of what services business wants to offer and the tools made available by information technology. This fitting task launches the actual *project planning work* of an investment with a nominated responsible project manager from both a business unit (business product manager, later also called as product manager) and IT (IT's business product manager, BIM). The business product manager is the key person in a project and in monitoring the accrual of the stated post-implementation benefits. He/she is responsible for instructions, the prioritizing of investment ideas, and from IT's point of view is the client. On the IT-side, BIM acts as the coordinator and head-figure and also collects the evolving documentation, and business chief information officers (BCIO) act by and large as IT's account officers towards business. There are often two BIMs in a unit, one for services and IS in production and another for investments.

Business units have an undivided responsibility of their products and services. All decisions are made in the investing business unit that has the ultimate control of project activities and, as a rule, becomes the owner of the investment. A business product manager is responsible for the development of his/her product and must always be aware of its overall situation.

The *investment management process* covers the investment lifecycle from idea to launch and final evaluation. It consists of idea gathering, preliminary mapping, maturation or feasibility study, construction, user testing and validation, launch and implementation, and final evaluation. Production, use, and maintenance usually start incrementally parallel to the launch and implementation. The heavy, formal, and detailed process is used as is for larger development investments, measured in monetary terms, and adapted for smaller ones. After each step, the go, no go or halt decision on the investment is made.

Decision-makers (an individual or an official organ) are pre-defined as well as artifacts that must be drafted in the previous step for decision making and the next step. Decision-makers and those individuals issuing a statement (e.g. product manager, BIM or technology architect) vary in different steps and come from lower or higher hierarchical levels and country or group level, depending on the monetary value, strategic importance, and criticality of the investment proposed on either country or group level.

5.2.1 Idea Gathering

Business product managers combine the information regarding their products from various sources for discovering ideas as well as innovations and getting insights on real user opinions and needs. For instance, feedback and initiatives and their total volumes and issues, production control, internal change requests, legislation and regulation, technological development, internal and external R&D, benchmarking locally and internationally, and trends are taken under consideration (see the idea generation section above). The reasons for a significant change or a negative trend in financial and technological metrics are resolved and, if necessary, the system or part of it is fixed or renewed. Continuous, abundant, negative feedback may also give raise to an improvement or a development idea. The main source of new major innovations is the systematic R&D work (scanning of global, local, and industry-wide trends, weak signals, novelties, trial projects, innovation etc.) that is included in business and IT strategies. Hence, a new idea

may originate from anywhere and lead either to the improvement of existing IS, services, and products or to the development of new ones.

The product manager decides whether an idea is worth additional investigation. A potential idea is first discussed informally in the business unit between product managers and possibly also their superiors. If it is seen as interesting, the business unit decides to start the project planning work. There are no specific criteria for selecting development ideas, but e.g. costs, benefits, strategic advantage, criticality, and urgency are always considered case by case.

5.2.2 Preliminary Mapping (analysis)

In the preliminary mapping (analysis), the product manager first creates and files an *investment idea, a prospect,* into the group-wide IPMS (see Appendix 2). An investment idea is a written description of the expected benefits of the investment and does not necessarily contain any numeric information.

The product manager then orders a preliminary statement of the rationality and technological feasibility and a time estimate, *an offer* for drafting an investment proposal from a BIM, the equivalent product manager in the IT domain. The decision on the continuance, halt or drop out of an idea is then made in the business unit on the appropriate hierarchical level of decision. The responsible product manager is only authorized to decide independently on minor error fixing tasks. All investment ideas with their time-estimate are handled in the business unit's group-wide idea decision organ and in a country-level organ that some business units have. These organs discuss the unit's overall production situation and customer feedback, prioritize the change idea list, change the status of the idea, and look if some ideas are combined.

The product manager updates the details of the investment and its status into IPMS. If an idea is approved, the product manager makes an *order* to the BIM of the maturation (feasibility) study for drafting an investment proposal (a development plan). If a good idea originated from user feedback or an employee initiative, the product manager is in charge of the remuneration of the submitter. A flexible gratuity is paid for accepted ideas, and a fixed reward for a good idea not pursued further. The decision is updated into CRM and both the submitter and an employee's superior are informed.

5.2.3 Maturation (Feasibility) Study

Based on the business unit's order, the responsible BCIO then has the leading role in the selection of those investment ideas on which a maturation (feasibility) study is launched. Within an investment, e.g. different economic sponsors (business units) and suppliers are managed as separate projects.

The business unit maps the required services through analyzing their own processes and defining their future state. It also defines and forecasts the expected concrete, tangible, and immaterial business benefits. Identified benefits are then defined more closely together with the metrics for their measurement.

Simultaneously, the IT unit starts the feasibility study, maps benefits to be reaped by the new system, and initiates the mapping of potential commercial applications together with several experts both from within and externally. Based on the winner solution, an *investment proposal draft* is formulated where costs and resource requirements are estimated and the ownership of the system to be acquired is negotiated.

Thereafter, *Quality Assurance (QAS)*, a single officer or an organ, depending on the country, processes all investment proposal drafts. The contents of the investment proposal or the descriptions attached are not intervened in this context. Instead, QAS decides on the quality inspection and evaluation needed. QAS also makes decisions on the need for exceptions permit processing, recommends one or several individuals to present an expert statement, and what other quality inspection is needed.

The evaluation of the investment proposals is completely an IT-department's responsibility. IT must be able to make realistic estimates, because it operates like an external supplier towards the business units. Therefore, it is vital to control resources, costs, and the quality of the systems and to recognize the cost and revenue structure. IT department must be competitive in case of the incorporation of the IT. Consequently, the evaluation procedure on the IT side has become stricter and no exceptions are allowed. Cost and quality awareness has increased. It is perceived to be more profitable to implement a system properly and get it finished than to continuously maintain quickly implemented, deficient systems.

The appropriate *quality inspection and evaluation* of the investment proposal draft are then accomplished. An organ consisting of IS architects and technical specialists conducts

the *exceptions permit processing* if seen necessary by QAS. The objective is to examine and approve solutions that are based on new evolving technology, i.e. to control the compliance with the long-term technology strategy of the group. Technical evaluation statements are received mainly through a *seconding procedure*. Seconding statements required as well as specialists asked to give them depend on the quality of the investment (e.g. representatives from the architecture, technology, and system departments concerning personnel resources, and from a customer or business unit). An investment proposal draft may also be processed in occasional expert meetings, depending on the nature and significance of the investment.

Quality approval is usually only a formal inspection of an investment proposal draft to ensure that the proposal is drafted according to the instructions, all needed seconding statements are enclosed, other required documents are appropriately drafted and enclosed, and all other required measures have been taken. The quality approval is accomplished by the BCIO, the business unit's IT management group or IT executive management group, depending on the investment.

An investment proposal, an offer of the implementation of the investment, is then finished. It contains costs, resources, and time schedule estimates from IT to the responsible business unit. The business unit's IT management group then makes the final decision on the approval of the investment proposal. Especially significant or large investments are additionally taken for approval either to the business management group or group executive management group. The responsible BCIO presents the proposal to the decision makers. No quality or other evaluations or processing is accomplished after this approval. The responsible business unit will usually become the owner of the investment, but in some cases the economic sponsor may be an auxiliary staff unit, and different from the owner.

No formal procedure for notifying about the investment proposal decision exists, but the BCIO mediates the decision to the responsible product and project managers. Finally, the product manager updates the status (Accepted/Dropped out) and details into IPMS.

5.2.4 Construction

The construction phase is then started according to the investment proposal's project plan and the status in the IDMS updated (under construction). The ultimate control of the ISD

project activities always lies within the investing business unit even though external consultants and experts were used. Communication is channeled through assigned, nominated individuals. IT appoints one person and a substitute towards both internal and external interest groups and other parties like the application supplier and the consultant company. There is a formal procedure for intra-project feedback and communication, but it is scarcely deployed. The deployment is largely dependent on the individual project managers' working habits, but additionally the general haste shadowing scheduled project work may cause a degree of indifference.

Follow-up meetings concerning a single investment are held between the business unit and IT. Regular statements on systems descriptions are received at points that require a quality inspection based on the project plan. These statements ensure that the work and the resultant documentation comply with the appropriate work instructions correctly and adequately. Specialist opinions, even if sought in abundance, are randomly received. Additional feedback is received from the project management group consisting of individuals, mainly on management level, that are regularly informed of the progress. Their commitment is often somewhat loose, which leads to a very low volume of feedback from them.

5.2.5 User Tests and Validation

During a development project, an application is tested according to the project plan's *test plan*. A group of pioneer users perform the initial test, first in the laboratory and thereafter as the first adopters of the new application. Employees are mostly used, starting with just a few individuals and then gradually increasing the amount. Officers in the contact centers are often the first to test new features and applications, thus getting familiar with them before the customers. Employees use the e-banking service as personal customers in addition to using it at work, so they represent well external personal users.

The first external users, e.g. friends and relatives of the employees, are involved only in the late testing phase after extensive internal testing. Usability tests, where also external users are involved, are accomplished regularly both in the development and production phases.

5.2.6 Launch and Implementation

After the testing phase is approved, the new application is launched to customers, one customer segment at a time, according to the *launch and implementation plan* of the project. Problems seldom emerge during the diffusion of the application use to external users. The comprehensiveness of the launch and implementation depends on the investment. The investment may be implemented partially or at once.

5.2.7 Monitoring, Control, and Final Evaluation

The business product manager monitors the costs, time schedule, and resource utilization monthly (see the idea generation section above). He/she compares the estimates and actual figures, reports on changes and deviations and, if necessary, makes new estimates by quarters. All system work as well as IT production and IT services costs are regularly reviewed on a summary level concerning both an investment and its individual projects with business unit management, business controller representatives, and the relevant BCIO from IT in attendance. Feedback and initiatives are an important indicator of the successfulness of an IS, product or service.

After the development project has been finished, *a final evaluation* of the work is drafted. It contains issues that have been unexpectedly successful or negative experiences. At the time of the field research, this procedure was still in its early introduction phase, and therefore there is not much experience of utilizing the evaluations.

The whole investment is transferred into production and maintenance after all the related projects are finished. The product manager finally updates the actual schedule, costs, use of resources, other necessary information as well as comments on the progress of the investment, and the status of the investment as “Finished” into IPMS.

6 FINDINGS AND DISCUSSION

In this interpretive case study, we explored *how user feedback management and other idea generation methods, information system and new service development are integrated* in a large scale e-banking service context. Our objective was to understand evolutionary web-service development together with users, an area that is little studied (Menor et al., 2002; Yang and Tang, 2005; Fuccella and Pizzolato, 1998; Murugesan and Ginige, 2005; Ramler et al., 2004; Alam and Perry, 2002). We specifically focused on the integration of ISD and NSD (Menor et al., 2002; Nambisan and Wilemon, 2000; Nambisan, 2003) and their

integration in idea generation and specifically user feedback and initiatives. Open-ended user feedback and initiatives in particular offer a constant flow of new ideas for continuously improving the existing services and for developing new ones, but their integration or utilization in ISD and NSD processes is vague (Fundin and Bergman, 2003; Geib et al., 2005). As the result, we develop an e-service development model for continuous WIS development (Figure 1). Next, we discuss our main findings in more detail.

6.1 E-Service Development Processes and their Integration

The constructed e-service development model presents a comprehensive innovation process (e.g. Cooper et al., 2002a; Cooper et al., 2002b) where idea generation, NSD, and ISD are the key processes that are fully integrated. The model takes into consideration customers, competitors, and market possibilities (Menor and Roth, 2008). Thus, it brings the focus of IS and marketing research closer to each other with regard to the technology-process-people triangle. (Nambisan and Wilemon, 2000; see also Nambisan, 2003)

The same processes are applied to all investments, be they minor or major, improvements or new investments, IS, WIS, products or services. The investment management or NSD guides the development and the actual development process in the construction phase varies depending on the investment type. ISD is the process for constructing IS and WIS, not a form of NPD as suggested by Sawyer et al. (2010).

The successful integration of the related processes is enabled by the adoption of formal, linear processes throughout the investment lifecycle, well-defined organizational responsibilities, roles, and decision-making authorities, both centralized and decentralized activities, and extensive use of centralized, group-wide and country specific supporting IS (see Appendix 2). Traditional, linear, and bureaucratic development methods are indispensable for the process integration and managing large, strategic, and critical investments like advanced web-services as suggested by Alam and Perry (2002). They are manageable also when outsourcing is incorporated in the development process. In our case, the IT department acts as an external vendor and may further outsource development work to third parties.

The integration enables the alignment of business and IT domains and the levels of planning through identical organizations, a middleman or intermediary, clear

responsibilities between the domains and levels of planning, and supporting IS. The integration also facilitates continuous communication and information flow between the actors of the processes and throughout the organization up to the group level. Business units have an undivided responsibility of their products and services. They are also the owners of the related processes and supporting IS on all levels of planning. IT acts as an enabler or service provider for the business-driven operations.

Murugesan and Ginige (2005) regard quality approval as a supporting process for WISD. In our case, heavy quality approval is a phase accomplished before the construction phase to ensure a sufficient level of pre-examination, documentation, statements, and inspections of the investment. The objective is to control how realistic the plans, timetable, and resource estimates are and the comprehensiveness of documentation for smooth transfer to the construction phase. The decision on starting the construction phase or holding or dropping out the investment is made based on the quality assurance. It is cheaper to drop out an investment at this point, when it is known what will be done but nothing is yet started. Halt or drop out may come later as well, but it rarely does.

6.2 Operational and Strategic Agility

Our case confirms that WISD is an iterative, evolutionary process with a long lifecycle (Ginige and Murugesan, 2001; Ramler et al., 2004; Murugesan and Ginige, 2005). The agility of ISD or WISD depends on the investment type and level of scrutiny, not on the actual development methods in use. Incremental, continuous ISD and WISD can be more agile than new development from scratch or implementing a software package. In large investments, more agility can be achieved by dividing the investment into manageable projects based e.g. on ownership or technology.

The level of formality of the development and decision making as well as the completeness and elaborateness of the documentation vary between projects, depending on the monetary value, criticality, and strategic importance of the investment either on country or group level. Yet, some investments, e.g. those based on legislation, can perhaps be developed as various projects but cannot be released incrementally according to the principles of agile methods (see e.g. Abrahamsson et al., 2002; Boehm and Turner, 2003; Cockburn, 2002). Outsourcing, even internally, also restricts agility on the investment or project level, but the actual construction can still be agile. Thus, the adoption of traditional development methods does not exclude agility.

Strategic agility (Doz and Kosonen, 2008) or responsiveness to changes in e.g. the environment and user needs is in the case organization achieved through a continuous strategic planning process. In addition to the periodical top-down strategy development, an ongoing bottom-up approach for updating the strategies is adopted. Business units continuously bring ideas into the investment portfolio based on systematic idea generation and search for new ideas, feedback and initiatives, monitoring, and control. Strategic agility also results from well-defined decision points throughout the investment lifecycle that allow halting or dropping out a project or an investment.

6.3 User Involvement

Continuous user involvement is the main driver of the evolutionary WISD process as maintained by e.g. Ramler et al. (2004). Yet, there is a difference between the involvement of internal and external users. External users are actively involved in the idea generation and production phases, but not in the actual development. It is also somewhat surprising that external interest groups do not seem to be involved in the maturation stage, although this definition phase is the most critical in the development process. Instead, internal users represent common users during the actual development. This may be due to the fact that employees use the e-banking service as personal customers in addition to using it at work, thus representing well lead users (von Hippel, 1986). The strategic importance of web-based services may also explain why external users are not directly involved throughout the investment lifecycle, although previous research (Ramler et al., 2004; Magnusson et al., 2003; Hsieh and Chen, 2005) has found it necessary for developing successful products and web services. These findings confirm that ordinary users in general seldom participate in WISD (e.g. Ramler et al., 2004; Fuccella and Pizzolato, 1998).

However, unsolicited, open-ended feedback is abundantly received during the production and maintenance phase of the existing web services that function as a prototype from both the users' and the organization's viewpoint (see Ramler et al., 2004; Magnusson et al., 2003; Kristensson et al., 2004; Nambisan et al., 1999). This feedback is applicable in every investment as it addresses the total offering of the organization, i.e. all products, services, IS, and even physical facilities. The integration of FMS in ISD and NSD processes together with the supporting IS enable ongoing indirect user involvement throughout the investment lifecycle and all levels of planning, as well as the diffusion of

user-originated innovation and good improvement ideas, complaints, and critique throughout the organization.

6.4 Limitations and Future Research

There are limitations also in this research. The research is based on data from one organization in one country, and the organizational and national culture of the case context may affect the results. However, the key processes and supporting IS were used group-wide, and the same processes and supporting IS were applied to all investments, be it IS, WIS, product or service. Moreover, all development work, i.e. minor and major improvements as well as new development, was managed similarly according to the resulting e-service development model.

The organization and its e-banking service are leaders in the world and the e-banking service is strategic for both the organization and the users. Also the number of heterogeneous, internal and external users is significant. The financial sector in the case region has been in the front-line transforming face-to-face services into digital online services. According to Menor and Roth (2008), financial sector and specifically retail banks represent an excellent context for empirically scrutinizing service competitiveness issues like innovation due to their changing and information-intensive environments. Thus, we believe the case is representative and valid (see Lee and Baskerville, 2003) and the resulting model will be applicable to other financial organizations and industries both locally and globally.

Yet, more research is needed on the WISD process and the adaptation of the resulting e-service development model in the context of strategic, operational, and critical WIS and web-based services for ordinary people. Future research is also called for on the agility of the investment management process. As contemporary WIS become closer or equivalent to digital products and services, more agility is required in both business and IT domains.

7 CONCLUSIONS

As the result of this study of an e-banking service development, we suggest an e-service development model, a comprehensive innovation process (see Figure 1) for integrating idea generation, ISD, and NSD. The related processes cover the investment lifecycle from ideas and innovations to launch and abolishment, and all levels of planning. The integration of idea generation, ISD, and NSD processes together with the supporting IS

help take the specific features of services in ISD and of IS in NSD into regard. They facilitate the constant flow of new and innovative ideas from both lead users and masses of common users. The resulting model enables the utilization of feedback and initiatives, i.e. ongoing user involvement, throughout the investment lifecycle. Organizations may concentrate on finding good ideas from the continuous flow of feedback and other sources of information and ideas. Constant interaction with users enables mutual learning and helps better understand each other.

By adopting the model organizations are able to improve the existing IS and e-services and develop new ones and even develop their total offering to continuously meet the constantly changing and diversified needs and desires of their heterogeneous customers and users. Implementing the e-service development model ensures their competitive advantage and customer retention also in the long run. Hence, we believe our results are valuable for the academia and for organizations in financial as well as in other sectors in their quest for new customers and markets.

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Appendix 1 Interviews Conducted

Data set	Interview topic	Interviewee	BU/IT	Level
1. Getting the "big picture" **Summer 2002 – Fall 2003**	Strategic ISD project	Business IT Manager (BIM) - project manager	IT	Tact.
	Investment lifecycle, evolution of processes and tools (IS)	IT departmental director	IT	Strat.
	Web-based services development	Business IT Manager (BIM) - project manager	IT	Tact.
2. Drilling down to feedback **Fall 2003**	Techniques and technologies of the e-banking service and customer relationship management (CRM)	Technical IT-expert	IT	Oper.
	Corporate-wide Contact Center (CC) technologies	IT departmental director	IT	Strat.
3. From IT to business **Spring 2004**	Corporate-wide Internet and mobile banking	Departmental director	BU	Strat.
	Feedback and initiative management	Specialist-team leader	BU	Oper.
	E-bank system	Product manager	BU	Tact.

Appendix 2 Supporting Information Systems

IS	Contents	Responsibility	Users
Web Content Management System (WCM) (Intranet, Extranet, Internet) -group-wide	-Internal guides and working procedures, statistics, reports -Internal and external instructions, forms, general information	-All organizational units	-External customers and users -All employees
Investment Portfolio Management System (IPMS) -group wide	-Registration of all investment ideas and investment proposals (approved and dropped out) -Investment lifecycle management and control (approved, hold, construction, finished, dropped out)	-Business units -Project manager	-Managers
Document Management System -group wide -project databank	-Internal communication and collection of feedback on the development projects -All documentation of cross-border projects	-Project team	-Read-only rights on request, depending on the project
Investment (Project) Control System -country-specific	-Monitoring internal and external costs of investment projects, i.e. total costs of the investments -An investment may contain several projects, e.g. different economic sponsors and suppliers managed as separate projects	-Project manager -Product manager	-Managers
Time Reporting System -country specific	-Registering and monitoring the working hours of the investments on project level	-Project team	-Managers
Hardware and Database Resource Control Systems -country specific -hardware/database specific	-Monitoring the hardware/database resource utilization of the implemented systems in terms of e.g. CPU seconds, GB's of storage consumed, klicks, response time	-Data received automatically and regularly	-Managers
System Development Follow-up System -country-specific	-Monitoring the estimated and the actual resource (e.g. financial, personnel) use of an investment on the investment level and on different phases of the investment lifecycle	-The person in charge of the investment, usually the project manager	-Managers
Feedback Management System FMS (part of CRM) -country specific -Feedback database	-Registration and follow-up of external, unsolicited user feedback from external customers and unknown users	-Quality Center	-Quality Center -Contact Centers -contact officers -branch officers
Initiative Management System IMS (part of CRM) -country specific -Initiative database	-Registration and follow-up of internal initiatives (investment ideas) from employees -Both approved and dropped out initiatives with decisions available as examples	-Idea Secretary	-All employees -Idea Secretary -Idea Officer
Helpdesk Support System (part of CRM) -country-specific -one implementation/ helpdesk	-Registration of interactions and monitoring of the helpdesk function	-IT helpdesk -Branch office helpdesk -Contact Centers	-Officers at helpdesks and contact centers
Email	-Internal communication	-IT	-All employees