Embedding Knowledge Processes to Maintain Service Levels and Efficiency in a Growing Software Service Firm

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Abstract: Software service firms are challenged to maintain high service levels and to innovate at the same time. Therefore, valuable human resources need often to be balanced between innovation and operations related activities. In this paper we describe how such as a firm deals with these issues by embedding their knowledge processes into their business processes. The advantage of embedding knowledge processes is that knowledge workers are more likely to adopt these processes in their daily support activities. As such the business processes for which they are responsible improves substantially. Two illustrations of successful interventions are provided: an improvement of the interactive voice response menu, and a doubling of auctioned sales leads via the phone. Through embedding some of the core knowledge processes (capturing, storing, organizing, and sharing knowledge) in the business processes of the support department the company under study is able to maintain service levels to clients and to innovate at the same time.

1 Introduction – From Small Firm to Medium Sized Enterprise

Small and medium sized enterprises (SMEs) are central to the European economy. In 2012, these firms accounted for 67% of total employment and for 58% gross value added [1]. The following types of SMEs are recognised in Europe: micro enterprises (less than 10 employees), small firms (10-40 employees), and medium sized enterprises (50-249 employees). The most influential of these SMEs are currently in high tech and knowledge intensive industries [2]. In this contribution we focus on the impact on the overall service levels and the organization of knowledge processes, when a small software service firm transitions to a medium sized enterprise.

In 2007, a few payment industry experts started working on a completely new online payment service. Based on their past experience these experts started to build a sophisticated new software platform that guarantees 99.99\% uptime, and is very flexible to scale. Working together in a small office, this team could communicate very effectively. Every employee within this small start-up knew what was going on and was familiar with almost all aspects of the business. In the start-up phase the original software developers of the core technical platform provided technical support to clients. This resulted in first class service as clients could talk directly to the people, who knew all details of the new technology.

Since 2007, this company has grown significantly from a small firm to a medium sized enterprise and currently employs more than 100 employees in 8 different offices. While the business is growing, innovation has been, and still is a key value driver for Adyen. Core developers are still working full-time to design more features, to develop new sales
channels, and to improve the overall performance of processing financial transactions for a growing number of large clients in the area of electronic payment processing.

As service is crucial for their business, the company set up a full-time support department in 2010. Before this time, support was done by the original developers, but due to the growing customer demand the company could not afford to use the valuable time of developers for equally valuable support purposes. Therefore, the company was faced with the problem of maintaining the required service levels of the support department while changing the workforce from knowledgeable developers to newly hired employees without any previous experience with the complicated system. It is much harder and more expensive to find developers, than it is to find people able and willing to follow repetitive customer service procedures. Considerable discipline is required to work on automating a task that could be done manually, when creating an innovative new feature provides more direct and visible results. The concern with hiring people capable of doing certain repetitive tasks is that the support department could grow out of hand quickly, making it much more difficult to maintain the service level and support quality that the original developers could offer. In this paper, we aim to provide a practical solution for maintaining service levels in a growing software company, based upon a novel knowledge management approach.

2 State of the Art: Managing Knowledge Processes in SMEs

In growing start-ups, the business processes evolve organically rather than in a planned fashion [3]. Small and medium size enterprises have the unique ability to react quickly to changing business environments, but have to do so with a limited set of resources in a short amount of time. This results in business processes that evolve naturally rather than in a planned and controlled fashion. Many knowledge and innovation driven organizations rely on highly educated employees in order to successfully maintain and operate the usually cognitively demanding business processes. It is a challenge for SMEs to attract candidates from the diminishing pool of qualified knowledge workers as such knowledge workers are highly in demand [4]. For these reasons, knowledge intensive SMEs are forced to be careful with their scarce knowledge resources. They need to improve the distribution and utilization of knowledge within the organisation to maintain the service levels and innovative nature of the organisation. The optimisation of such process is generally done informally and as part of the daily activities [5]. This results in the use of many ad-hoc and intuitive knowledge management tools and methods [7].

Managing knowledge processes is not trivial for small and medium size companies. Knowledge is not an object that can be stored and retrieved, and assessed based upon its properties. Rather, knowledge is part of the everyday business process of knowledge workers. For many companies, improving knowledge processes start with process analysis, which is usually performed by outside researchers, consultants, or specially assigned internal work groups [6][7]. Such process analysis is therefore a sophisticated way of telling somebody how to do his or her job. Knowledge workers, however, have a considerable degree of freedom in their work, and therefore often have the power to resist being told what to do. To a knowledge worker, formal knowledge process approaches may seem bureaucratic and constraining – and perceived as a procedural annoyance rather than as a valuable means of support [8].

3 Objective: How to Maintain Support Service Levels when Growing

In this paper we will provide a detailed description of how to tackle the problem of maintaining the required service levels of the support department while growing rapidly as a business. We will illustrate how an actual company deals with capturing, storing and sharing knowledge about their growing market and their core technical system in order to
develop new employees to deliver service to its clients. This requires a number of unique knowledge management approaches that will lead to service delivery that is comparable to that of the original developers of the platform.

3.1 Methodology Used

In order to demonstrate how a growing software service company could keep up their service levels, a case study has been performed. This study has been conducted in two stages. In the first stage observations took place at the support department at Adyen. Adyen is a medium size Software as a Service (SaaS) company providing a payment service on multiple sales channels (e.g. e-Commerce, m-Commerce, Point-of-Sale) worldwide. In order to guarantee the security of sensitive payment details, Adyen employs a 'private cloud' service model. The private part indicates that Adyen's service is available across the world but the data-centres are internal to the business, and not shared by other parties. The cloud part means that Adyen can flexibly grow and shrink their service to match changing business environments.

Knowledge processes rarely create value for the customer directly [9]. There is an intervening variable that does create value: the business process. Therefore, in the second stage, quantitative analyses are performed on the same case basis. The effectiveness of the business process is measured by organisational performance. For example in a support department, supplying the client with a timely and accurate reply to a technical issue will result in a higher service level. Because of the intervening variable, the success of the knowledge process is measured by its ability to improve the business process. The size of this improvement is then determined from the lasting change in organisational performance.

3.2 Business Case Description

Adyen operates in a complex and highly competitive market, where knowledge about payment processes is critical for operational excellence. Due to this complexity, Adyen does not only provide payment services but is also involved as a payment consultant for its clients. On the basis of their knowledge of the payment industry as well as their access to large sets of payment data, Adyen is able to offer advice to clients. Big data applications are used to convert large amounts of payment data to key performance indicators (KPIs) like shopper conversion rate, shopper fraudulent behaviour patterns, and performance of payment methods. However, not all knowledge is available from the data in Adyen’s platform. Especially the knowledge from, and knowledge about the client resides inside the heads of the employees who are in contact with the client.

Due to all these activities the demand for service and support is rapidly growing. Clients of Adyen approach the support department typically when:

- There is something they do not understand,
- There is something wrong with the service Adyen offers,
- They would like to have a new functionality, or
- They require information or knowledge about payments in general.

When companies see support as a necessary evil, it makes sense to try to minimize costs by any means. Thus assigning cheaper, lower educated workers to support positions, and provide these workers with rigid work processes telling them how to respond to customer queries. In such a situation employees do not get the resources and responsibility to deal with core business issues and do not have a habit of critical thinking or challenging the status quo. As a result, the issues that really bother the clients will never get solved in a structural way. Without an intervention, in a growing company, issues start piling up requiring ever-bigger support departments.
4 Approach

Knowledge management activities should ideally support the business processes. The business process at Adyen has evolved and has proven to be successful in dealing with the daily challenges knowledge workers face. The business processes are focussed on creating value for the client, by optimally assigning scarce resources. In the case of a technical support department, the provided service levels add to the overall organisational performance of the firm. In other words, internal business processes are of strategic value to technical support departments.

When a small enterprise grows whilst still being innovative, the services provided usually get more complex and diverse. Innovations give rise to new products, and new features on existing products, for which customer service has to be provided. As a result, the knowledge workers need to be familiar with a more complex and extensive software platform. Due to this added complexity, it becomes more difficult for knowledge workers to manage their business processes ad-hoc. A company could analyse key business processes and make formal improvements to achieve higher efficiency. Such an analysis is costly, and foregoes on the learning process of the knowledge workers. Alternatively, this company could choose to facilitate the internal knowledge flows, such that knowledge workers have better access to the knowledge they need to perform their jobs. The business processes as a result will be more effective and efficient, which will result in higher organisational performance. However, such interventions require complex analyses and large investments. Small or medium size companies require a less costly way to improve organisational performance, and develop their human resources at the same time. This can be achieved by establishing knowledge processes that allow knowledge workers to get more insight into their own business processes.

Adyen uses the payment data it has in its systems to provide insight into various aspects of the payment business. Payment data are abundant at Adyen, and can be quantitatively measured. Unlike the payment data, the issues that the consumers of Adyen’s services face are highly context dependent and vary greatly in the way they are presented. For instance, some clients provide detailed descriptions and examples; others just give notice of something that went wrong. Customer issues are usually worded in support tickets, or transferred via a phone call to the support department. Knowledge from the clients about these issues and knowledge about the situation of the client needs to be codified and aggregated in some way. Only then will it be possible to get insight into the bigger picture and draw general conclusions on the current state of the service level. The goal should be to spot the opportunities with the biggest impact to improve the level of customer service with the least amount of manual labour. The problem is that in order to gather this knowledge, additional effort – besides their daily tasks – is needed from the knowledge workers.

The solution is thus to respect the expertise of the knowledge workers, and support them in managing the business processes for which they are responsible. Knowledge should capture and made available, at the right time and place, embedded in the business process. The support workers should not have to deviate from their daily routine in order to facilitate a certain knowledge process. In order to make lasting structural improvements to the business process, the knowledge that has been captured via embedded methods needs to be analysed. Since there are highly educated knowledge workers in the support department, they can do the analysis themselves. After all, they are the experts on providing customer service. All they need is a way to get a look at the bigger picture. By involving the support workers, no additional change management is needed when interventions are performed to improve the service level or to reduce the number of new tickets. Financial investments are limited, and moments for reflection on the change more frequent when these interventions
are kept small. With a continuous process, workers will not only learn by doing, but also improve their analytical skills. Knowledge process interventions should thus be:

- participative: include the knowledge workers in the decision making and let them learn along the way;
- incremental: take small steps with short intervals of reflection, learn by doing;
- continuous: there is always more to learn and improve, reflection on earlier iterations creates insights for future improvement [4].

As the requirements are formulated it is important to know if the knowledge processes are implemented in the right way? Therefore, performance indicators are essential to evaluate the success of knowledge processes and to guide possible improvements. The development of the right performance indicators is usually a process of trial and error and evolves incrementally with the development of the knowledge process. The goal of such performance measurements is to help knowledge workers to improve the business process rather than to focus on the quality of knowledge processes directly.

5 How to Implement Knowledge Processes in a Growing Software Service Firm

Our observations at the company show that there are two kinds of knowledge processes at work. The first category concerns a number of practical knowledge process, which improves the business process by enabling the knowledge worker to capture, store, organize, or to share knowledge more efficiently. For example, a Wiki page on the intranet, with answers to questions on a number of issues would qualify as such a tool. Another example could be a document repository with manuals on delivered services. These tools provide immediate benefits to the knowledge worker in terms of the speed with which issues can be solved. Such knowledge processes are actively used – even when not embedded – as long as the support worker is able to use these tools effectively.

The second category of knowledge process concerns the descriptive knowledge about the business process. Knowledge that is captured in such tools can be leveraged in order to assess how the business process works. Descriptive knowledge about the performance of the business process helps knowledge workers to change their own business practices. However, descriptive knowledge processes do not provide immediate value for the business. Table 1 shows which knowledge processes will be actively used by knowledge workers. Descriptive knowledge processes will thus only be adopted when fully embedded in the daily activities of the knowledge worker.

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We implemented embedded descriptive knowledge processes in two central systems of the technical support department:
1. The Asterisk phone system
2. The Kayako ticket system

These knowledge processes were aimed at capturing knowledge from the support workers, and combining it with data from these two core systems. The knowledge that has been captured and organised by this process over time has allowed Adyen to realise two very substantial improvements with very little effort. The support team managed to realise a
70% improvement in the number of callers that were directed to the right item in the interactive voice response menu. Another simple intervention – also carried out by the support workers themselves – realised a twofold increase in the number of answered sales calls (potential leads) coming in via the phone.

The big advantage of having highly educated knowledge workers at the technical support department is their ability to perform such interventions themselves. Not only are they better at learning how to answer tickets faster, and with a higher quality response (single-loop learning), they are also able to analyse the core business. The embedded knowledge processes help the knowledge workers to take a step back from their daily routine, to look at the big picture, and to challenge the status quo (double-loop learning). As such, the support workers are not only able to improve their own business processes but even the business as a whole.

6 Summary of Recommendations

In order to maintain service levels in customer support, Adyen hires and places experienced, higher educated workers in support positions. The rationale behind this approach is that these support workers provide high quality technical support and are also able to provide business advice. Adyen believes this positively affects customer satisfaction. Moreover, educated workers do not like repetitive tasks. By providing them with the means to analyse their own business process, they will actively seek out structural solutions for problems and so help to improve the overall service levels. By embedding knowledge processes in the daily work activities of the support department, support employees actively store, organise, and share the knowledge that is needed to make structural improvements.

In addition, the support employees are provided with the necessary resources to deal with the core business. Employees of Adyen's support department are expected to think critically and to not accept the status quo. As such they are put in complete control of the client relation. They manage the knowledge base on the Adyen support website, create their own manuals, keep them up-to-date, and cooperate on issues with other departments. By solving issues in such a structural way, support employees seek to eliminate repetitive tasks as much as possible.

Through embedding some of the core knowledge processes (capturing, storing, organizing, and sharing knowledge) in the business processes of the support department the company is able to maintain service levels to clients. This strategy has proved to be very effective as clients indicate to be very satisfied with the knowledge level of the support team. Furthermore, Adyen's support department constitutes only 5% of the total workforce. Compared to a previous venture of Adyen’s founders – in the same industry – the current support department is four times smaller.

In order for European knowledge-intensive SMEs to be competitive and innovative, it is important to understand how value is created through maintaining service levels. Knowledge processes are crucial for providing support services to clients. For small firms the knowledge needed to support clients is readily available in the firm but for medium sized enterprises it is no longer possible to rely on informal channels only. As such firms usually start a formal support department, issues of maintaining the preferred knowledge flow need to be addressed. By showing an example of how to embed a number of important knowledge processes in the support practices of a growing software services firm, we aim to encourage policy makers, researchers and members of growing SMEs to deal with these issues in their ongoing work.
References