

Illustration of value creation in real estate business

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ABSTRACT

Purpose – The added value of corporate real estate and facilities management has gained a lot of attention during the past years. However, the actual value creation has received less attention. In this paper the aim is to increase the understanding of value creation in real estate business and reflect the current approach against lean theory.

Design/methodology/approach – Due to the descriptive nature of the research, a FM case of energy management service was selected to illustrate the value creation.

Findings – The value creation process and the underlying practices illustrate how the value is currently created for the end-customer in the case. The results indicate that the service process is not built around the value creation, but for example to control the work of others or to follow the service contract. The service process is also interrupted for several reasons such as poor resource allocation, overload of work, and lack of knowledge to maintain information. To overcome the challenges, more attention should be aimed on value creation and its improvement.

Research limitations – More case studies applying the same research context as used in this paper should be conducted to increase the validity of the results.

Practical implications – The techniques, methods and elements of value creation theory can be used by organisations in real estate business to gain better understanding on their own value creation processes.

Originality/value – This paper offers a first insight into the value creation theories of lean in real estate business.

Key words: lean theory, value creation, end-customer value, case study

1. INTRODUCTION

It has been widely discussed that in real estate sector the shift from bricks and mortars to an end-customer-driven mindset is going on. The focus is no longer just on cost minimisation and real estate operations but on supporting end-customer functions and users. However, it is still relatively unknown how the value is actually created for the end-customer in real estate business (Roulac et al. 2006). On one part, the added value theories in corporate real estate management and in facilities management have successfully pinpointed the added value of real estate for organisations core business (e.g. Lindholm 2008; Appel-Meulenbroek & Feijts 2007; Jensen 2010). However, these theories do not explain how the value is delivered or how the actual value creation process should be constructed. In general, the theories show the input and the output but do not explain what happens between them. Roulac et al. (2006) have gone a bit further and identified the value creators and value destroyers in real estate development projects. However, the understanding of value creation should be more deeply in order to reach effective management of value. The importance of the end-customers' needs, requirements, and preferences is undoubtedly recognised but the value creation is still established with an old-fashioned approach. The traditional unit-process description with input-output thinking does not provide good solutions for understanding value creation. If the approach is not broadened, the shift from cost minimisation to customer-oriented approach might never be completed. Therefore, in this paper the main aim is to increase the understanding of value creation in real estate business and reflect the current approach against an operative value creation theory - lean theory.

An in-depth case study is used to gain deeper understanding of the current value creation. In the case, the end-customers are a Finnish retail chain and their retailers. The service provider, which is one of the biggest facility service providers in Finland, supplies energy management services for the end-customers. In the paper the value creation is studied in three phases. First, the actual value creation process is described and illustrated. Second, the underlying practices, which funnel and direct the value creation, are discussed. Finally, the current value creation process and practices are reflected against the value creation approach of lean.

The paper is structured as follows. First, the key elements of value creation are presented through framework that is based on the lean literature. Second, the official value creation process as well as the underlying unofficial practices in the case environment are presented. Third, the findings of the case are reflected against the value creation principles of lean theory. Finally, suggestions are made how the current FM process could be improved and conclusions are drawn.

2. MAINTAINING AND ENHANCING THE VALUE CREATION ACCORDING TO LEAN THEORY

Lean management made its breakthrough at Toyota's factories known as Toyota Production System (TPS). Due to the customer driven process, value creation is an essential part of lean. In addition to production such as airplane and car industry, lean and its value creation elements has been also used for example in public sector (Radnor & Walley 2008), healthcare (Esimai 2005), and other services (Abhi et al. 2006; Piercy & Rich 2009).

For developing a more comprehensive approach, an extended framework for maintaining and enhancing the value creation (Figure 1) is built based on the key ideas of Womack and Jones (1994) and other lean literature. The framework includes five key elements of value creation: (1) a deeper understanding of customer value, (2) recognition of the current value creation, (3) establishing a flow, which (4) captures the customer value, and (5) thinking through continuous improvements (in Japanese *kaizen*).

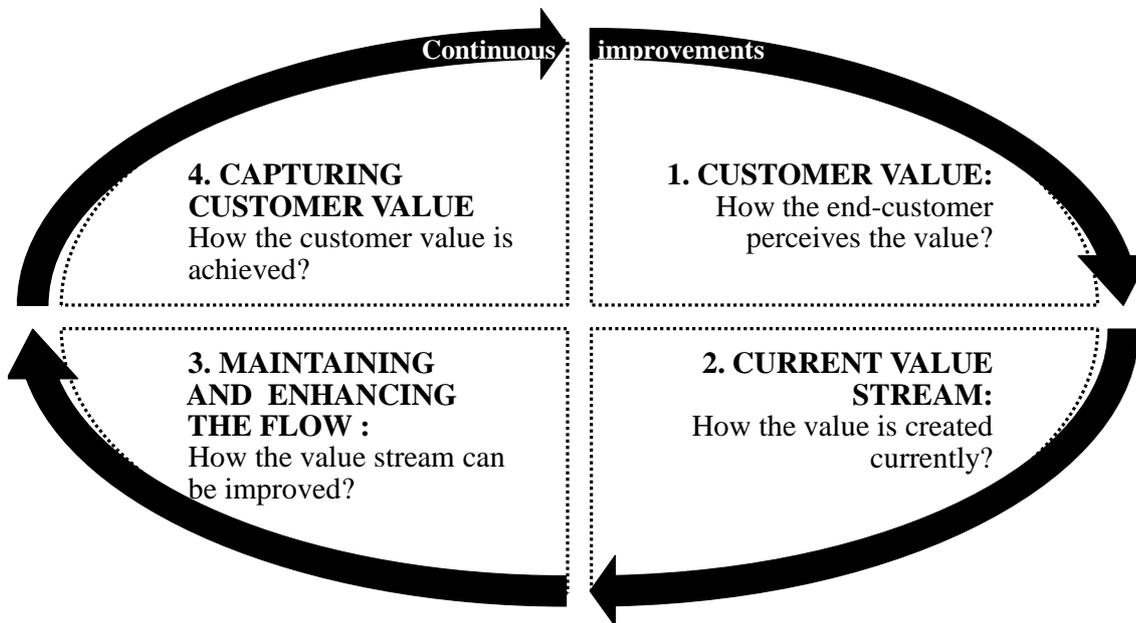


Figure 1 Framework for managing and enhancing value creation.

The continuous improvements keep the framework going on and on because the process strives for perfection, which is never achieved (e.g. Imai 1997; Liker 2004). In lean all employees of the organisation from bottom to top participate in the continuous improvements: it is not only the responsibility of the management level (Liker 2004; Hines et al. 2008). The problems are solved and ideas developed among multi-skilled teams (e.g. Womack & Jones 1994; Liker 2004), not by dividing the problem into tasks, which are solved by separate people. Morgan and Liker (2006) also stated that continuous improvements with effective learning related to information sharing and knowledge transfer may be the most sustainable competitive weapons in lean. Next, the framework is presented in more detail.

Customer value and current value stream

The starting point in value creation is to understand how the end-customer perceives the value (Womack & Jones 2003; Liker 2004). Because there are a variety of values, a clear distinction between customer value and other values should be drawn. In general, economical value or exchange value is often the base for value thinking (Jensen 2005). For example, shareholder value, which is an economical value, is well developed and established in the financial literature (Khalifa 2004). However, as Khalifa (2004) cites Grönroos (2000), it

has been found that shareholder value is not generated by stock exchange, but by profitable customer relations. Similarly Jensen (2005) criticised that the building industry has traditionally focused merely on the value of offering, not on the value of relations. In the academic real estate literature there are studies that highlight the role of relations. For example, Rasila (2010) has identified from the tenant perspective seven factors, such as commitment and communication, which have impact on the perceived value of relationship quality.

Although the customers will pay the same price for a certain product or service, the value of the product or service might not be the same for all customers (Jensen 2005). In other words, the customer value is defined by the customer (Khalifa 2004; Ballard et al. 2001), not by the supplier, retailer, shareholder or any other third party. Therefore, the customising of service or product to fulfil the needs of the customer is essential. Customer quality also changes over time (e.g. Khalifa 2004; Sarshar & Pitt 2009) and, thus, it should be constantly monitored.

In addition to the identification of customer value, the current process, in which the product or service is produced for the end-customer, should be visualised (Liker 2004) because usually people are attracted by what they are seen (Tezel et al. 2010). Particularly visualisation aims to improve the flow because through visualisation the problems and the non-value adding activities are not hidden but recognised for value creation improvements (Liker 2004). A tool for this is called value stream mapping. It provides an opportunity to see the current value stream with its information and product streams, and it can be used to develop the value stream and value creation as well (Rother & Shook 2003; Keyte & Locher 2004).

Maintaining and improving flow

The flow improvements are aimed at the value creation process itself. From process-focused lean perspective, the core idea is to remove the waste activities (*muda* in Japanese) of the process in order to minimise the interruptions in the value creation (e.g. Ohno 1988; Shingo 1989; Liker 2004) and to decrease the variability in the process (Koskela 2000). One of the key elements in Toyota's factories to prevent waste is to create cells to facilitate one-piece flow: instead of moving the value creation from one unit to another, the value can be created inside smaller units in a flow (Liker 2004). In addition, to avoid waste, the value creation should be paced at the pull of the end-customer, not pushing the service or product to the end-customer (e.g. Womack & Jones 2003; Liker 2004; Hines et al. 2008). This is also known as Just-In-Time (JIT) production.

The roots of waste elimination are in Toyota's car manufacturing industry and, thus, seven typical manufacturing waste types, which are called Ohno's waste types, are identified to be overproduction, time and stock on hand, unnecessary movements and transportation, overprocessing, and defects (e.g. Ohno 1988; Imai 1997; Liker 2004). Similar kinds of waste types, such as unclear communication and duplications, have also been identified in the service sector (Bicheno 2004). Hines et al. (2008) have found that in an information flow environment approx. 49 per cent of the activities are not necessary in the value creation and are not creating value for the end-customer.

The range of waste types is not limited to manufacturing or service industry. For example, from the human perspective, waste is also generated if the employee potential is not fully used (Liker 2004) or a wrong product is made efficiently (Bicheno 2004). Nowadays, in the environmental consciousness era the wasted energy, water, and materials (Bicheno 2004) are good examples of process parts that do not create value for the end-customer.

Waste elimination and the flow improvements go hand in hand. However, the waste elimination is not enough. Resources should be rechanneled by decreasing the workload of people and machines (in Japanese *muri*) and by levelling the workload (in Japanese *mura*). Insufficient flow management creates *muda*, *muri*, and *mura* (Ohno 1988; Koskela 2000). The plan-do-check-act cycle (PDCA), also known as Shewhart's cycle or Deming's cycle, set up a framework for continuous improvements in flow management: plan the target improvements to eliminate *muda*, *muri*, and *mura* (plan), implement the plan (do), check if the planned improvements have been achieved (check), and standardise the new procedure to prevent the waste (act) (Imai 1997). The PDCA cycle should be used systematically on all the levels in the organisation.

However, how to decrease *muda*, *muri* and *mura* and, thus, improve the flow, if the value creation process is variable i.e. is not the same? According to Imai (1997) before any improvements, the unstable value creation process should be standardised by using best practices and maintained. By standardisation Imai (1997) means finding a process solution that is *the safest and easiest for workers and the most cost-effective and productive way for the company to assure quality for the customer*. In addition, despite all the utilized

techniques and methods, such as standardisation, pull system, and visual management, also employee motivation, empowerment, and respect have a great role in flow and value management (e.g. Imai 1997; Liker 2004; Hines et al. 2004).

Capturing customer value

While the focus in flow improvements is on waste elimination, in value generation the focus is on elimination of value losses: the control of the value creation process has been built to capture the well-defined and also the hidden customer value (Koskela 2000). A fundamental question is if the current value creation process actually generates the required value. Therefore, as Koskela (2000) stated it, companies need to ensure by measurements that the value is created for the end-customer. Capturing the customer value should not be limited to the time the product is ready, but it should also cover the deliverable of the product (Koskela 2000).

Because customer value is a dynamic concept, capturing the customer value needs constantly improvements. As in the flow concept, the process, methods, techniques, etc. to capture customer value should be maintained and improved. However, according to Morgan and Liker (2006), in addition to process standardisation there are also other categories for best practices, for example design and engineering skill-set practices.

3. STUDY DESIGN

A facility management case of energy management service between a service provider and end-customers was selected to support the exploratory nature of the study. The service provider is ISS Facility Services. The focus in the case is on the value creation of the service provider. As target value creation process the request process was selected, which processes errors, claims, and other feedback. This service process does not just respond on the maintenance issues, but functions as a feedback loop for energy management improvements and, thus, can be used to generate future value by removing the future waste.

The case was structured to have four phases. First, the customer value attributes (i.e. what really creates value for the end-customer) was identified. Second, the current value creation process was studied and visualised, as well as the unofficial practices influencing the actual value creation process. Third, the flow was analysed against value creation theories of lean. Finally, the future principles to apply continuous improvements were developed. In this paper the focus is on the results of the phases two and three.

Background of the case

In the case the value creator is a global commercial facility service provider and the end-customer is a nationwide retail chain and its retailers in Finland. The service provider implements energy management activities for its end customer's approx. 170 real estates, which are mainly retail, in a certain geographical area in Finland. The strategically important premises are connected to the building automation system control centre of the service provider.

Even though the retail chain does not own all of its retail premises, the role of the retail chain can be parallel to the owner due to its responsibilities. In the case, the energy management service provides solutions to decrease the energy consumption of the whole retail chain and its retailers. However, the service contract is only between the retail chain and the service provider, not between the retailers and the service provider. However, due to the actual service flow, both the retail chain and its retailers are the end-customers in this case.

Data collection

At the beginning of the case, secondary data was collected through five general interviews or meetings, in which organisational structures, content of the service, quality of the customership, etc. were discussed. The primary data was collected through interviews, databases, and workshop working. In total 15 value creation interviews were conducted: 14 interviews with those employees of the service provider, who are actually creating the value for the end-customers and one interview with one external party. In this type of interviews the semi-structured format was based on themes; what are the daily activities of the interviewee, how the daily activities are conducted, how the information related to the daily activities is processed and what kind of relationships and dynamics the interviewee sees and confronts. Under all themes several detailed questions were listed to understand the value creation. When possible, approx. 3 interviews with a specific task were performed to reach the saturation point. The value creation interviews were conducted during

June-October 2010 and each interview lasted from 1 to 2 hours. Primary data was also gathered from data systems of the service provider through two separate sessions. The data included the requests related to approx. 170 retail or logistics real estates from January to October 2010.

The results of the interviews were verified and supplemented in a one day workshop in December 2010. The workshops participants were from the management and operational level. In the workshop customer value, the current value creation in the selected service process, and the improvement potential were discussed. After the data collection and verification, the case was analysed and future improvement principles were developed.

Data analysis

One way to analyse data is to use codes. In coding, concepts are developed and derived from the data (Corbin & Strauss 2008). The meanings in the data are tagged and labelled for further analysis (Miles & Huberman 1994). In this study 15 value creation interviews and the workshop memorandum were coded systematically. Following Miles and Huberman (1994), five schemes, which were formed based on the research aim, were used as a tool to find the codes. The schemes were: (1) used tactics, methods, and techniques to accomplish things, (2) ways of thinking, (3) surrounding elements, (4) process elements such as turning points and sequence of events, and (5) the waste of the process, which was separated from the previous scheme. After the first coding circle, the data was revised and sets of codes were formed, and finally concepts were built up against found patterns, whys, and trends. Altogether 30 themes emerged from approx. 500 codes.

4. RESULTS

In this chapter the results are presented. First, the official service process, in which the value is created in the case, is described and visualised through a simplified value stream map. Second, the unofficial practices, which direct the process, are presented. After the current situation is presented, the findings of the current service process and the underlying practices are reflected against value creation elements of lean.

Illustration of the current service process

In this case the service process has four routes that are illustrated in Figure 2. The used route depends on three issues: on the (1) maintenance and (2) service management contracts between the retail chain and service provider, and on (3) the scope and nature of the request.

The service process starts when the end-customer, an employee of the service provider, a consumer, or somebody else notices a maintenance issue that is related or not to the energy management service. The maintenance issues are passed to the service provider via helpdesk, manager, or maintenance man. Helpdesk handles most of the request, approx. 80 per cent. After the request is received in the process, it will be redirected to one of the four routes. The redirection of a request to a certain route is usually done through software systems. However, in total there are three software systems, but in this phase two of them are in use. Helpdesk uses only one software system, but in addition to this managers and maintenance men use also another system.

The first route is the simplest. The alarm control centre generates an automatic alarm, which is directed to the maintenance man on call, who visits the place and fixes the fault. The second route is the most common one. After the maintenance division inside the service company or the maintenance man directly has received the request, the maintenance man goes to the real estate and fixes the fault. The second route is used in the maintenance issues that are agreed upon in the maintenance contract. When the route is not part of the maintenance contract, the request is directed to the manager, who decides which route to take. The manager is the link between the end-customer (especially the retailer) and the service providers' inner units or an external service provider.

If the manager assesses that the request is under his/her authority, the manager can directly order the work inside or outside their own organisation depending on the needed specialist (route 3). If the service is ordered inside the case organisation, the request is transferred from the manager's software system into a third system that is used by the repair man. After this the repair man goes to the property and fixes the fault. However, if the scope of the request exceeds the manager's authority, the manager needs to take the fourth route. In this route, a separate permission from the retail chain need be attained. Before the issues can be introduced to the retail chain, the manager arranges a bidding that is the base for the manager's proposal for the end-customer. The proposal is accepted, rejected, or postponed by the end-customer in a two phase

process. If the proposal is accepted, the manager can order the work as in the previous route from the party that has won the bidding.

After the fault is fixed or repaired, the maintenance or repair man should inform the end customer. However, this is left undone more often than it is done. The supervisor follows up the repairs or maintenance issues through the data system in which the acknowledgements are left by the maintenance or repair man. If the work is done by an external party, the manager knows that the work is done when he/she receive the invoice.

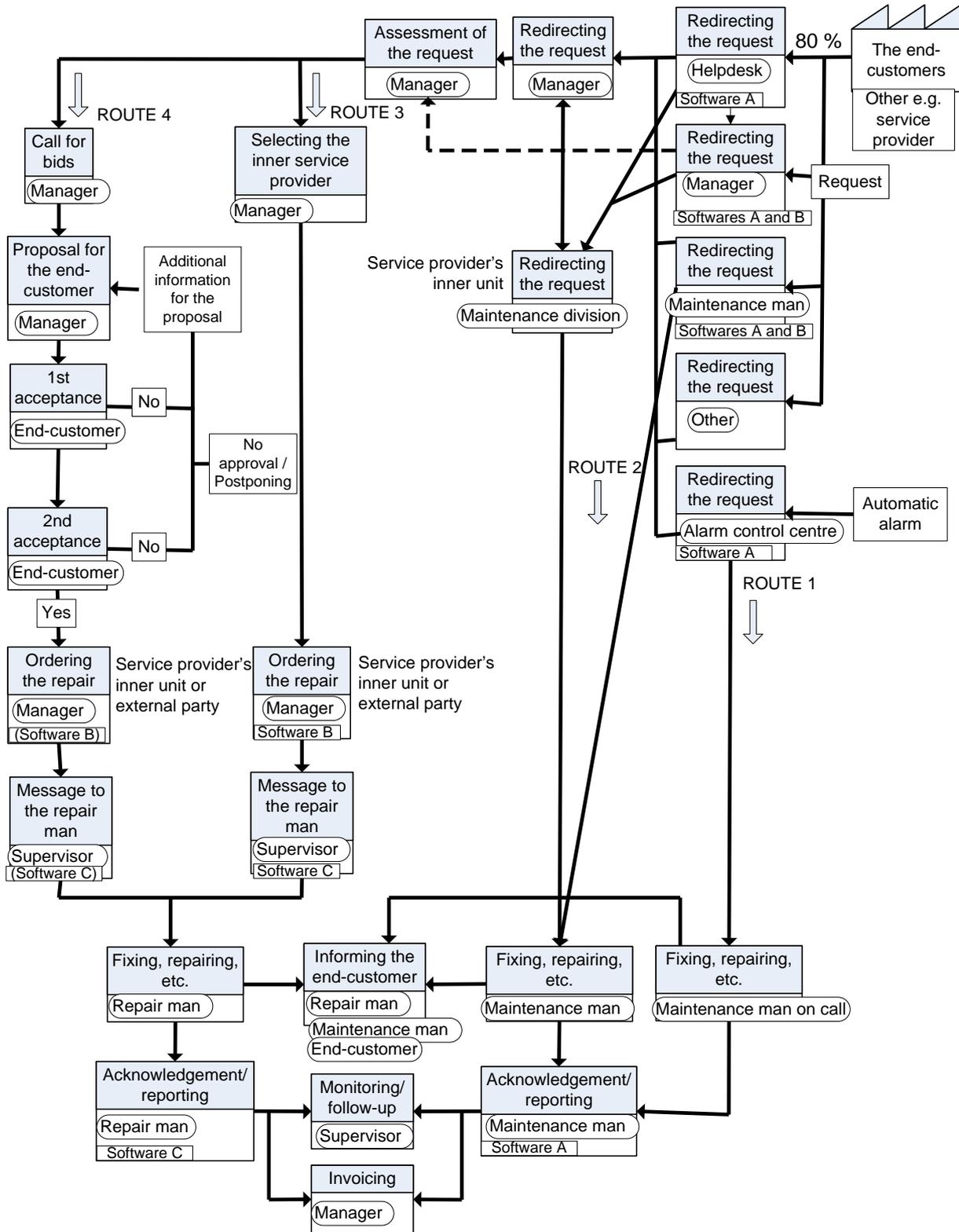


Figure 2 Illustration of the current service process.

The identified underlying practices

Behind the service process there are unofficial practices, which shape and funnel the previously presented service process. In total 30 unofficial practices were identified. These are typically not visualised in the official service process and, thus, are described next.

Currently the owning, using, and operational management of the real estate are all separated in the case. Taking the management level as an example, repairing, data collection, data analysis, redirection of information, decision making, checking, etc. are all separated tasks and (1) the employees of the service provider are authorised to take care of one of the tasks in the service process and hand it over to the next step. Due to the individual tasks, the interviewees highly appreciate and value (2) the autonomy of the employees. Currently the autonomy is usually (3) controlled by reports or other mechanisms, but if the mechanism is not in use for some reason, the only way to handle the process is to simply trust that the tasks are done with care. The service provider has noticed that the patterns and habits cause variability in the service process, because (4) there is more than one way to accomplish tasks. For example individuals have their own way of handling information.

The service provider has already noticed that the actual implementation of identified improvements in the service process is difficult. The used approach has been (5) from top to bottom because the improvements are usually developed by the management level. Some improvements, such as a more united use of software and the reporting system, have been implemented (6) to streamline the process and in some cases (7) the workload has been levelled for example by multi-tasking. Also (8) the pace of the service process has been set by several parties aiming to increase the continuation for example by weekly meetings or annual maintenance. Currently the service provider has also (9) centralised some of its functions, such as help-desk and energy management, according to the general trend to gain accumulation and other benefits. Despite of the improvements, the service provider has also confronted challenges. (10) The resource allocation is not always successful and chronic lack of time is common among some of the employees. Also (11) unfortunate timing causes backlogs.

The status of managers is not coherent inside the organisation of the service provider. (12) The service provider has defined the role of the manager to be central; the manager should have the most updated and comprehensive knowledge on his/her real estate but not all employees inside the organisation act in line with the definition. Also (13) the problem solving in the case is handed solely to the manager. Because the manager is defined to be the node in the information chain, all information is mostly channelled via the manager. Due to the information flow protocol, (14) the information chains can be long, which the service provider has already identified to cause extra work in the service process. Another problem in the service process was considered the (15) lack of time and knowledge to maintain and work with information even though it was seen crucial. The service provider uses information also (16) to empower its employees by instructions and guidelines to move ahead on the service process and, thus, to speed up the process. The service provider uses information also as (17) a trigger in the service process. However, (18) the information can also be missed, waited, expired, flooded, lost, or misunderstood to name a few, which all were considered problems in the service process.

Regarding the customerships of the service provider, the employees have got the impression that (19) some customerships are more valuable than others. This is not a stated argument by the service provider, but because the service processes are structured in different ways in different customerships and even in different real estate the perceived image has strengthened. The service provider had also noticed (20) the multifaceted end-customer. Although the service provider has the contractual relationship with the retail chain, the actual decrease in energy consumption is based on what is done on the real estate and its premises. Especially the managers face situations, in which conflicts between the interest of the retail chain and retailers appear.

In order to tailor the energy management service to match the needs of the end-customers, the service provider has constructed (21) a flexible and diverse supply of energy management services. However, sometimes the service provider feels that the value for the end-customer is misdirected by (22) black-and-white measurements, which are set by the end-customer.

The service provider has identified some of the focus areas, in which it aims to invest in the near future. In general, (23) the role of energy management and other green issues should be moved in the spotlight inside the organisation and also among the end-customers to convince also the non-environmentally conscious employees and end-customers. The service provider aims (24) to be more than just a service provider: it could be the expert on energy management, the motivator for decreasing energy, or the booster to enhance the development.

The aim of the service provider is especially (25) to invest on data and processing it into valuable products as part of the energy management service. The service provider has noticed that they have a massive data stock, which could be used in a more versatile way and, thus, increase the end-customer satisfaction and willingness for further partnership. Another main aim is (26) to increase the cooperation between the different business units and their employees. In some areas the service provider has already achieved encouraging results that will be used as a boost in further development. The service provider is also keen to continue (27) to provide all the services that are related to energy management service by itself: they avoid outsourcing if possible. It was also mentioned that (28) instead of focusing on separate process parts, a step backwards should be taken in order to see the whole service process.

In order to succeed in the development, the service provider sees that (29) the old habits and schemas of the employees that are slowing down or even preventing the development need to be changed, or reprofiled. The service process is also planned to be developed by (30) decreasing the bureaucracy for example by simplifying the software systems and information chains.

Reflection of the service process against lean

From lean perspective the service process in the case is structured according to the service contract, which does not necessarily explain in a comprehensive way what customer value should be provided. Besides that the service process does not necessarily create and capture the whole customer value, it is also interrupted in several ways. Next the main interruptions and waste types are discussed through six findings.

First of all, approx. 20 per cent of the requests are not handled and redirected through the helpdesk but are redirected by somebody else who has not been instructed for redirecting. The extra loop causes delays, waiting or even errors. In addition, if the request is directly given to the maintenance man and not registered into the system by the helpdesk, the work load of the maintenance man is challenging to level.

Second, after the request is registered the helpdesk redirects the request by transferring it from one system to another. Due to the lack of compatibility of the systems, delays or even missed information occur in the process. In some cases the request is never handled due to the missed information.

Third, the redirection of the request can be long. For example, if the centralised building automation system control centre notices a fault, which is not included in the maintenance contract but could be fixed by the maintenance man, a request is sent via the database and the helpdesk transfers the request into another database, which provides the information to manager. After this the manager can order the work from the maintenance division.

Fourth, in the route 4 bidding and making the proposals requires extra work and time and to get the two acceptances from the end-customer causes waiting and delays in the value creation process. If the proposal is not accepted, the resources could have been allocated to something else. In some cases the postponed repairs might even cause extra work and errors in the daily maintenance.

Fifth, after the work is done, the repair man or maintenance man should give an acknowledgement to the data system. However, this is not always done: the acknowledgement was given only for 76 per cent of the received requests. Also the time of giving the acknowledgements is not the same: some might give the acknowledgements at the end of each day or week, some might give them when they have the time, and some might leave it undone. From Table 1 it can be seen that the lead time, the time when the request is received to the time the request is handled and an acknowledgement is given, of the urgent requests is more than the lead time in the 2 day works or 1 month works. Similarly the lead time in 1 day works is longer than the lead time in the 1 week or 1 month works. The missed information causes especially for the managers extra work and waste activities such as checking, waiting, and overprocessing.

Table 1 Requests and lead times.

Category of the request	Lead time (days)	Number of requests	Per cent share (%)
Urgent	14,4	2 226	27 %
1 day	32,4	1 027	12 %
2 days	13,7	3 816	45 %
1 week	25,7	483	6 %
1 month	13,6	518	6 %
Other	35,3	330	4 %
	15,5	8 400	100 %

Last, many times the end-customer is left uninformed even though the request has been handled and the situation has been fixed. According to the customer value interviews the end-customers, especially retailers, expect to have real-time information. However, this expectation is not systematically captured.

There are also a variety of interruptions that cannot be seen directly from the value stream map: for example the multi-faceted end-customer, lack of best practices, and lost opportunities. These are explained next.

The underlying practices from lean perspective

The underlying practices have a great negative or positive impact on the value creation. By reflecting the practices against lean value creation, new insights for the shift from cost minimisation to customer-oriented approach can be gained. A summary of the reflection is presented in the Table 2.

In the case the value creation is built around tasks with separate employees and business units. The organising around tasks does not allow one-piece flow, but the process is constantly disturbed while handed over to the next person or unit. The tasks-focused structure also encourages optimising only the tasks, not the whole process. Due to the separate tasks, the autonomy is highly valued in the case. However, mechanisms are built to control the autonomy, not to capture the customer value. The autonomy also allows employees to accomplish activities in their own way. From lean perspective this causes process variability, which should be eliminated by standardisation and best practices.

At the moment the value creation improvements are implemented from top to bottom. In lean the preferred approach is the exact opposite: from bottom to top. When the improvements are generated on the operational level, the absorption of the improvements for the daily life is less painful. In the case the service provider has gained some benefits by streamlining the process by waste elimination and workload levelling. Although some of the improvement activities are in line with lean, the waste elimination has not been systematic. For example, the process has been tried to pace by meetings, reporting, etc. but because different parties without cooperation have set the pace, more *muda*, *muri*, and *mura* has appeared. Instead of centralisation, one-piece flow should be established to facilitate the waste elimination.

More variability is generated to the value creation process, because the role of the manager is not adapted uniformly inside the organisation of the service provider. Those who have adapted that manager has a central role in the value creation, especially in the information flow, circulate the information via the manager. Those who have not adapted the role of manager bypass the manager and act against the protocol. When all information is circulated via the manager, he/she confronts a flood of information, which cannot be maintained or managed with the given tools, and the manager can even be a bottleneck in the information flow. Better standardisation and best practices are required for the managers and for the whole service provider in order to develop a learning organisation. If the manager can maintain and manage all the information, it creates a valuable know-how asset that can be used to serve the end-customers. When the information is not circulated via the manager, the missed, misunderstood, expired, etc. information causes uncertainty to the manager, who tries to remove the uncertainty by doing waste activities such as checking and controlling, which are not creating value for the customer. In addition, in some case the long information chains are caused because the information is circulated through the manager. Long information chains increase the risk of missed information and, thus, cause more waste. Because the information is planned to circulate via the manager, the problem solving is mainly passed on the responsibility of managers, not on multi-skilled teams.

By giving employees harmonious instructions, guidelines, etc. the service provider has actually created standards or best practices. Especially the visualisation of instructions and guidelines enhances the value creation and decreases extra work and bureaucracy. In the case the information has also been used as a trigger to either push or pull the process on. For example, if an energy management activity, let us say rescheduling the air condition of a retail premises according to the changing business hours, is pulled as preferred in a lean process, the activities in the process are paced to achieve the rescheduling not before or after the change but at the change.

In this case the employees' feelings of inequality of the customerships can create a dramatic situation, in which the starting point is that capturing of all value in every customership is not necessary. Although the idea to have key customerships is not against lean, the distortion of the importance of the customerships can cause damage in the value creation and for the service provider. Similarly, if the end-customer is not visible in every stage of the value creation, employees may not know who the customer is, and, thus, customer value is difficult to capture systematically. The current flexible and diverse supply of energy management services

supports mass customisation. Because the value is defined by the end-customer, mass customisation can be used to capture the customer value. Although measurements are needed to ensure the value capturing, narrow measurements can mislead the value creation even if the measurements are set by the end-customer: the service provider should try to minimise the value losses.

Table 2 Reflection of the underlying practices against lean

The underlying practices	Value creation is...		From lean perspective
	enhanced	disturbed	
- Employees are authorised for one task		x	- The process is constantly handed over to the next person which does not allow one-piece flow
- The autonomy of employees	x	x	- Currently mechanisms are built to control the autonomy of employees, not to capture the customer value.
- Controlled by reports etc.		x	- Lack of standardisations and best practices creates process variability
- No one way to accomplish tasks		x	
- Improvements are implemented from top to bottom		x	- Improvements from bottom to top
- Streamlining the process	x		- Systematic waste elimination on a stable process, which is maintained
- Leveling the workload	x		
- Pacing the service process	x	x	- The pace of the process is uncontrolled due to the many pacers
- Centralisation	x	x	- Create one-piece flow instead of centralisation
- Poor resource allocation		x	- Decreasing and leveling the workload
- Poor timing		x	
- Manager as information node is not seen in a united way		x	- Decrease the variability
- Long information chains		x	- Use information sharing and knowledge transfer to create a learning organisation
- Problem solving manager's responsibility		x	- Multi-skilled teams for problem solving
- Lack of time and knowledge to maintain and work with information		x	- Lack of standardisation and best practices in maintaining information causes muda, mura and muri
- Empower employees by instructions etc.	x		- Visualisation of instructions and guidelines
- Information as a trigger in the service process	x	x	- Just in time
- Information missed, misunderstood, expired, etc.		x	
- The feeling of inequality of the customerships		x	- To capture the customer value is at risk if the target level of service is too low or the customer is unknown
- The multifaceted end-customer		x	
- Flexible and diverse supply of energy management services	x		- Mass customisation is needed, because the end-customers needs are not the same
- Black-and-white measurements		x	- Measurements are needed to ensure the value capturing
- Aim to use the energy mgmt business opportunity	x		- Using business opportunities
- Aim to use the data in a more comprehensive way	x		- Minimising the unused potential
- Aim to be more than a service provider	x		- Value engineering
- Aim to increase the cooperation	x		- Flow improvements
- Aim to see the whole service process	x		- Avoiding optimising sub-processes
- Aim to change old habits	x		- Continuous improvements
- Aim to continue on decreasing process bureaucrac	x		- Decreasing muri and mura
- Aim to avoid outsourcing	x		- Waste elimination

A hint of lean or more exists in each of the future aims. However, the benefits of lean can disappear if the implementation of the aims is done with the traditional approach. For example, the aims to decrease the process bureaucracy and to change the old habits are necessary, but without process standardisation the improvements are difficult to implement. The shift from process parts to the whole value process and from separate business units to cooperated units is in line with lean management. Also the aim to avoid outsourcing decreases the interfaces and, thus, the potential sources of waste. However, if the service is produced in the organisation, in its separate business units, the interfaces are not eliminated.

Until now the lost opportunity and unused potential occur in the process in the form of available data stock, which has not been used comprehensively. More customer value can be created and captured by harnessing the existing potential. In addition to the waste elimination, new customer values should also be identified

through value engineering, because the customer value changes over time; the development of the energy management service might bring new opportunities.

5. CONCLUSIONS

In this paper a deeper understanding of the value creation in real estate business was accomplished through a deep case study of energy management services. The current value creation process and the underlying practices were described and mirrored towards the value creation elements of lean management; the alternative for the traditional way of thinking to shift the course from bricks and mortars to the needs of the end-customers.

Despite of the limited nature of a single case study, in this paper the findings show that currently value creation processes are not necessarily built to capture the customer value, but for example to obey contracts, or to control the work of others. In the value creation process, a lot of waste activities, such as waiting, checking, and extra work occur. However, to simply remove the waste parts of the value creation process is not enough to attain shift; the underlying practices funnel the value creation and, thus, need to be adjusted with lean. Non-standardisation, optimisation of tasks, lack of practices to maintain information, and an end-customer who is lost from the sight all disturb the value creation.

In the future the value creation process could be studied in different contexts by changing the service, the end-customers or the value creators. The cross-section of value creation processes and related practices would offer a great opportunity to evaluate which direction should be taken in the future.

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