Tampere University of Applied Sciences

Mapping and Developing Accounting Processes

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ABSTRACT

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Mapping and Developing Accounting Processes

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Thesis covers a commissioned project for a case company in the financial administration industry. Accounting processes were to be mapped for a set of customers with similar systems and workflows. The scope of said processes was limited to adjusting journal entries, period closing procedures, fixed asset accounting, cost tracker creation, and State Treasury reporting. Process mapping was required for better transparency, visibility of the work, and process development. The objective of the project was to construct detailed and presentable process maps, while seeking ways to improve these processes.

Theoretical background consists of considering processes and workflow on a general level with examples of different methods to map out processes, in conjunction with different principles on improving processes. Relationship maps, cross-functional process maps, flow charts, and service blueprints were considered. Cross-functional process maps were chosen as the working method for this case.

Data was gathered via observation during the author's employment in the case company, in addition to interviews with process owners. Based on the data gathered, cross-functional process maps were created for each process. The maps revealed key activities of the processes and stakeholder touchpoints. As such, process transparency improved. Furthermore, recommendations on process improvement were made for each process. Some recommendations focused on making the workflow more fluent, for instance by removing unnecessary activities and reducing waste within the processes. Most of the recommendations, however, were concerned with developing quality within the process: improving the accounting practices and benefitting the customer as well as the case company. In total, twelve different suggestions were made for the processes in question.

It was concluded that the thesis project can serve as a good starting point for process improvement, but process development must be a consistent effort that is done in cooperation with the process owners, while acknowledging available resources.

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process mapping, accounting

CONTENTS

ABBREVIATIONS AND TERMS

A/R	accounts receivable
A/P	accounts payable
CFPM	cross-functional process map
GL	general ledger
I-P-O	input-process-output
WBS	work breakdown structure
ISO	International Organization for Standardization
ASQ	American Society for Quality
VAT	value added tax
XBRL	eXtensible Business Reporting Language

1 INTRODUCTION

This Bachelor's thesis covers a commissioned project on process mapping for a case company. The case company is a medium-sized company based in Finland and it offers mainly financial administration services for its customers. The services include accounting, accounts payable and receivable (A/P, A/R), collections, payment transactions, and payroll. These functions are split between their respective departments, while ICT and customer service departments serve all functions. At the time of writing, the company employed more than 200 people and generated more than 10 MEUR of revenue annually.

Over the past few years, the company had experienced rather rapid growth and gained a good deal of new customers. This did not occur without a fair share of 'growing pains', and there had been some struggle to maintain the required level of service in some areas. For example, service requests were not fulfilled in a timely fashion, or accounting records were not up to a desired standard. Some of these issues stemmed from a lack of preparation when acquiring new customers – for example, the key processes were neither mapped nor described in a detailed manner. This general ambiguity led to confusion on the part of the customer, as well as within the organization – this became evident during informal discussions with employees in the company. Furthermore, some key roles were under-resourced and faced additional turmoil due to personnel changes once the customers were acquired.

The author began his cooperation with the case company through a practical training in its accounting department. The training began some months after a set of three new customers was acquired, and the situation was still rather volatile at this time. The case customers were medium to large-scale organizations with most of their financial administration (accounting, payroll, A/R, A/P) outsourced to the focal company. During the training, the author was tasked to assist in some of the tasks with this set of customers, and hence gained access to the relevant sources of information for the thesis topic: mapping and developing accounting processes for the customers in question. The topic was proposed by the management during the training, and the author was later hired for a full-time position,

therefore retaining access to sources even though the practical training concluded.

The work in the company's accounting department could be divided into a few main categories: daily accounting tasks, monthly accounting tasks, and year-end closing tasks. The year-end close did not take place during this project, so it was left with less attention. The main focus was on the daily and monthly tasks, which could be further broken down to period-ending procedures, fixed asset accounting, adjusting journal entries, reconciliation tasks, VAT (value added tax) and other taxation related tasks, financial reporting, and cost accounting tasks.

Most of the tasks in any accounting process are performed in order to meet the legislative requirements for recording transactions. These requirements are outlined in the Accounting Act: for example, consistent use of a chart of accounts, accrual-based accounting, trackability of entries, and maintaining an audit trail (Accounting Act 30.12.2015/1620). Accrual accounting refers to recognizing economic events regardless of the timing of the cash transactions (Investopedia 2021), and audit trail refers to the chain of documents and data that are related to an accounting entry (Taloushallintoliitto n.d.). Evidently, the accuracy of accounting records is also in the interest of tax authorities. One could say that the 'final products' of the accounting process are the financial statements, which are also required by the law. The statement of financial position (balance sheet), the income statement (profit or loss statement), and the statement of cash flows are the three major statements that are prepared. Ultimately, these should give a "true and fair view" of the financial situation of the entity in question. (Accounting Act 29.12.2016/1376.)

Furthermore, management of any entity is usually interested in its cost structure, current trends, and future prospects. Various reports can be prepared for a more comprehensive view of the financial situation, even though not required by the law. This – usually internal – reporting is under the domain of "management accounting", in contrast to "financial accounting" described above. (Bentley University 2021.)

In this case, the set of customers shared quite similar processes in regards of financial and management accounting. Therefore, this project aimed to generate process descriptions that would apply for all of these customers, even though the processes itself were separate of each other.

2 THEORETICAL FRAMEWORK

2.1 Thesis topic

The topic of the thesis is process mapping – or process descriptions. Generally, these terms are used somewhat interchangeably. In this study, process maps will refer to diagrams, and descriptions will refer to written passages. The thesis project was a development project for the company – as mentioned in the introduction, the commissioning company did not have its accounting processes mapped out for all of its customers, and this had contributed to difficulties in terms of workload management and maintaining service levels. Hence, the topic was relevant in a business sense. With more knowledge of the processes, management may be able to divert needed resources to a problematic process, or redesign processes altogether.

There are many reasons to map out processes, as will be demonstrated in the theory section. For instance, though, process maps are generally a prerequisite for process improvement. In the case company, this would go hand-in-hand with developing employees' know-how in the future: one must map out the required tasks in order to understand, what kinds of knowledge and skills are needed. Additional benefits would be improved transparency and communication, as the work would be made visible on diagrams and hence help employees and managers understand relations and touchpoints in the process. Similarly, bottlenecks in terms of time and effort could be recognized, and new employees could be introduced to their roles with process maps.

In terms of the author's studies, this topic supported his specialization into accounting and finance, as he gained an overall understanding of what is generally required in providing accounting services.

2.2 Thesis objective, purpose, and research questions

The objective of the thesis was to clarify the structure of the processes, improve transparency within the company, enable process improvement, and assist employee training in the future. The purpose of the project was creating detailed process maps and descriptions for the accounting processes for a set of customers, while seeking ways to improve said processes. To reach the objective, one had to answer the main research questions: “What are accounting processes composed of for the selected set of customers?” and “How could these accounting processes be improved?”.

To break these down to sub-questions, one would have to find answers for the following: “What are the key activities in each accounting process?”, “What are the key touch points to other stakeholders (customers, other departments) in the processes?”, “How can the workflow for each process be improved?”, and “How can the process quality be improved?”.

Identifying the activities in a given process was the core task of this thesis project. Moreover – as will be elaborated in theory section – identifying customer touch points is crucial in improving processes in knowledge work. If an organization was too focused on the internal process, it could lose track of what is actually important to the customer. Hence, the goal was to make note of these touch points and gain understanding of their significance to the customers.

However, the internal process cannot be neglected, either. As functions are separated to different departments in the case company, information flow might be compromised at times, and the overall flow of the process can be hindered. Therefore, recognizing workflow patterns within the organization was another focus point during the process mapping. Furthermore, the interconnectivity of processes needed to be addressed for clear understanding of how different processes affect each other in the organization. In terms of improvement, the project focused on recognizing bottlenecks and unnecessary activities, as to make the processes more efficient. Another way to improve the processes was recognized as finding ways to generate more value to the customer – in other words, how can the accounting process be executed so that it benefits the customer more.

2.3 Concepts and theory

According to Sharp (2009, 56), a business process is a collection of interrelated activities that aim to achieve a specific result for a stakeholder. Hence, the act of process mapping means tracking and noting the details of such activities. In the case company, the accounting processes are considered to be the collection of interrelated activities of daily, monthly, and annual accounting tasks. For example, making entries to the general ledger (GL) (the categorized collection of recorded financial transactions (Kirjanpitolautakunta 2021, 14)), monitoring that entries are made correctly, VAT calculations, reconciliation of financial records, managing fixed assets and depreciations, period-closing tasks, and so forth. The primary stakeholders are the customers, but the other departments in the company are also affected by these activities and are hence stakeholders as well. The results of these activities may be the financial statements produced, or simply the required compliance with reporting standards and accounting principles.

Business processes can be visualized in different types of maps. According to Damelio (2011, 2), depending on the scope of the map, three main types are used: relationship maps, cross-functional process maps (swim lane diagrams), and flowcharts. Relationship maps are used to describe organization-wide connections. In other words, they describe “internal or external supplier-customer relationships”. A relationship map shows the ‘big picture’: the major entities of an organization and the throughput pattern, starting from an input from suppliers and ending with the service provided to the end customer. (Damelio 2011, 39.) A generic model of a relationship map is shown on figure 1.

In financial services, customers can be considered suppliers as well, since they generate the financial inputs required for the service. For example, the inputs can be sales invoices, salary information, and budgets. The service itself consists of processing the inputs to create the outputs, which happens in one of the major departments: accounts receivable, accounts payable, accounting, or payroll. The outputs can be collected invoices, salaries paid and entered into the accounting records, or depreciation entries based on the budget. Another supplier would be the provider of the accounting software, for example.

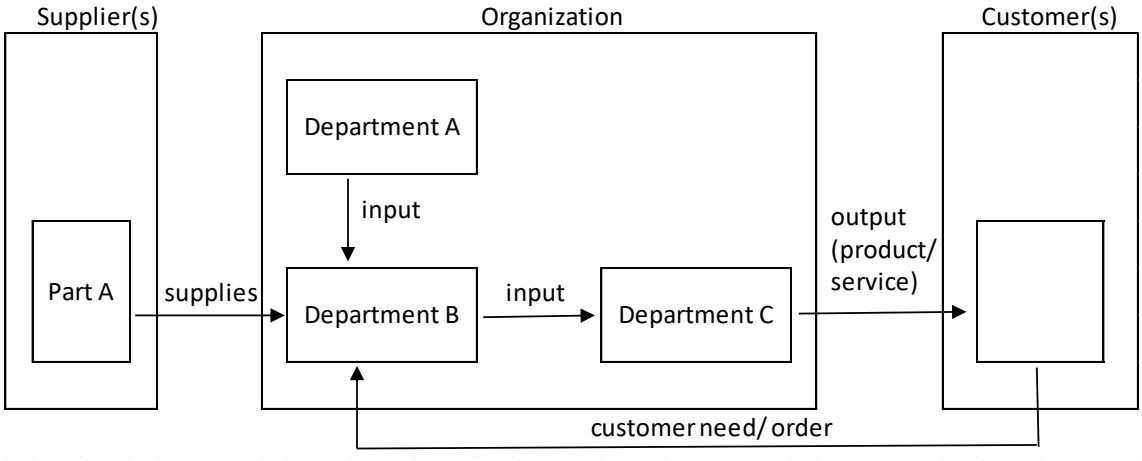

FIGURE 1. A generic relationship map

Flow charts are used to graphically represent a “drill down” sequence of a unique activity in a larger process. Specific symbols are commonly used to indicate a certain type of activity, for instance inspection, delay, or move. The intention is to visualize the boots-on-the-ground reality of the process. (Damelio 2011, 94–95). Figure 2 depicts a sample flow chart. For an accounting process, a flow chart could depict a given activity in a very detailed way. The flow chart could show steps such as “access GL search tool”, “filter search by cost center”, and “choose time period for search”.

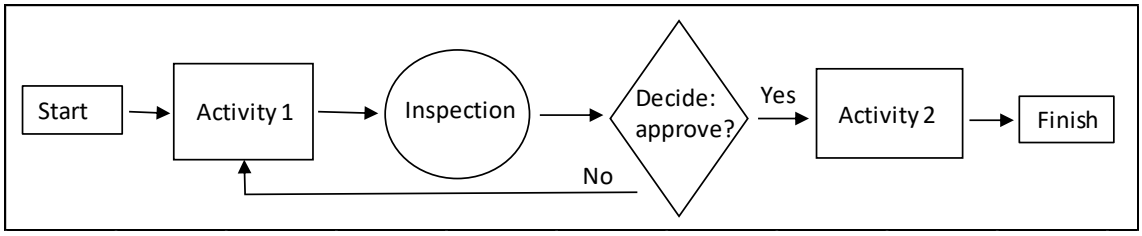

FIGURE 2. A generic flow chart

Cross-functional process maps (CFPMs) show the series of interrelated work activities (or a “path of work”) that ‘cross’ several functions. These are also referred to as “swim lane diagrams” based on their appearance: the map shows different entities involved in the process as their own rows (swim lanes). Work activities are represented by boxes in their respective lanes. Lines of ‘workflow’ show the path of work across different activities and entities. The key difference with the relationship map is that the CFPM shows the activities that take place in different departments. CFPMs make the entire workflow visible, highlight customer touch

points, show work and its location in the organization, make supplier-customer relations visible, illustrate organizational hand-offs, and identify patterns in the workflow. (Damelio 2011, 73–75.) Figure 3 shows a generic CFPM.

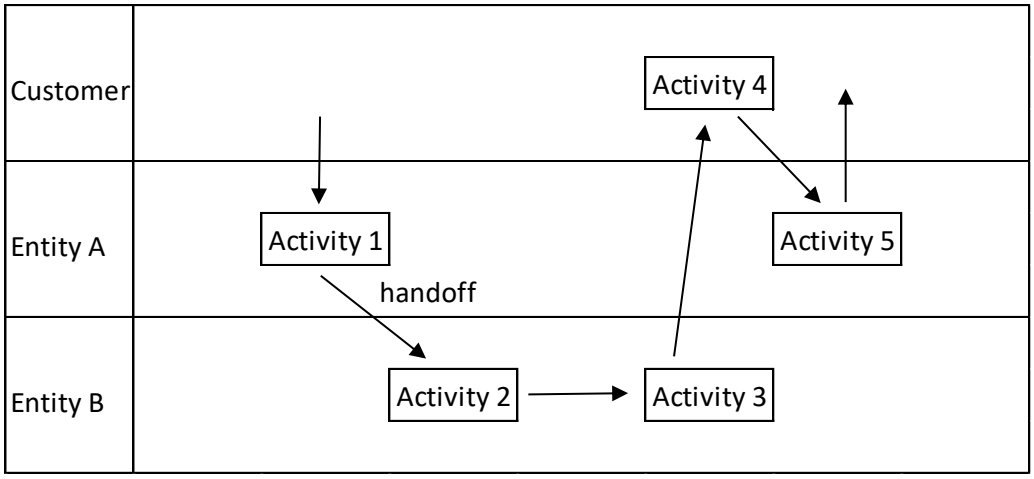

FIGURE 3. A generic CFPM

In the case company, the entities would be the departments that take part in a distinct process, in addition to the customer(s). For example, an accounting process might have interrelated activities with accounts receivable and payment transactions. Customers are, of course, the most important entity. The lines signifying workflow indicate how the work progresses from one activity to another, and once the flow crosses over to a different entity, a cross-functional handoff occurs.

One should note that the supplier-customer relationships include such internal relationships as well. Fundamentally, any given business process interaction can be described as an input-process-output (I-P-O) model (Damelio 2011, 36). Therefore, any entity providing an input is a supplier, and any entity receiving an output is a customer. In accounting, an example of a basic internal I-P-O would be transferring salary data into the accounting system. In the case company, this would occur so that salaries are first recorded in the payroll system, and then the data is relayed into the accounting software through a connector application. Often, the salary data causes errors in the accounting software due to faulty combinations of different cost trackers. For example, a certain cost center does not allow entries with a certain work breakdown structure (WBS) identifier. As accountants do not have access to the payroll software and vice versa, the error

data must be collected by accounting and relayed to payroll for corrections. Afterwards, the corrections need to be entered manually into the accounting software as the final output of this particular I-P-O.

Another take on process mapping is presented by Bitner, Ostrom, and Morgan (2008, 71), who refer to “service blueprinting”: a process modeling technique, which shares similarities to other visual depictions of business processes but is less formal and less complex. A typical service blueprint has five components: customer actions, onstage employee actions, backstage employee actions, support processes, and physical evidence. The focus of the blueprint is the customer, and all other activities are seen as supporting the value proposition (“an innovation, service, or feature intended to make a company or product attractive to customers” as defined by the Oxford dictionary). An example of a service blueprint can be seen on figure 4.

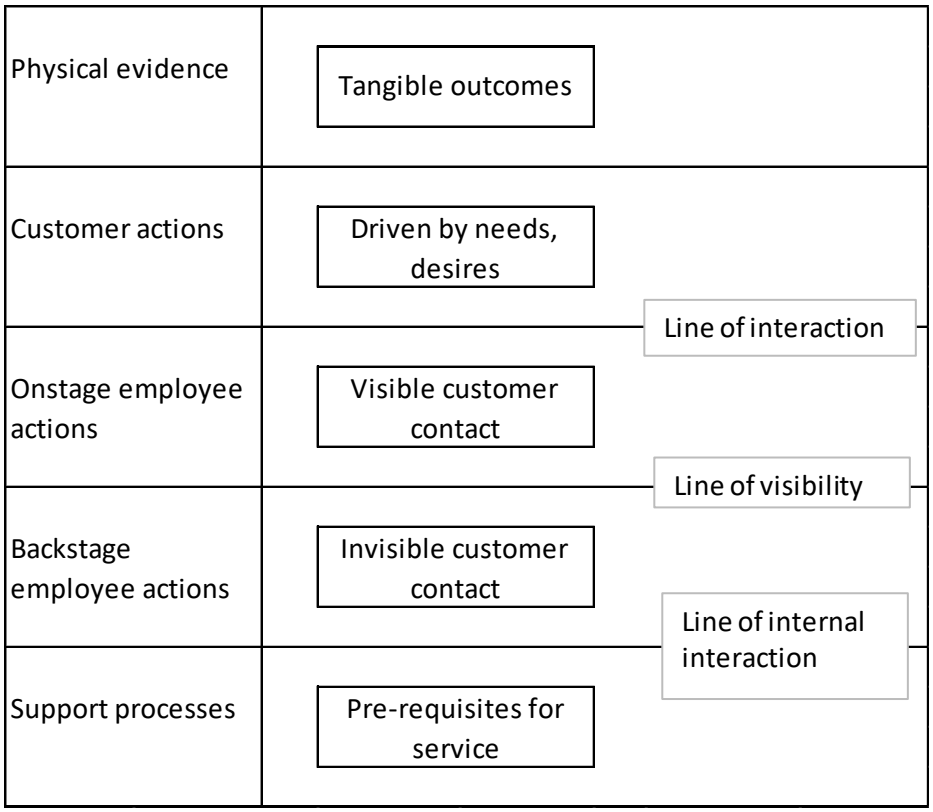

FIGURE 4. A generic service blueprint

The internal entities are divided into onstage, backstage, and support, instead of functions or departments. Evidently, onstage employees are responsible for the interaction with the customer. The backstage employees take part in providing

the service but are not visible to the customer. The supporting cast elements include the functions that are not engaging with the customer but enable the service in one way or another. The blueprint introduces the concepts of “line of interaction”, “line of visibility”, and “line of internal interaction”, which simply indicate where hand-offs occur between components. (Bitner et al. 2008, 72–73.)

In the COVID-19 era of remote work and customer service, one may find the default service blueprint difficult to implement – at least in the context of knowledge-intensive work such as accounting. According to a Eurofound report (2020, 3), nearly half of the workers in the survey sample reported working from home to some extent during the pandemic, while one third of the respondents worked exclusively from home. In Finland, remote working was still recommended by the public health authorities in August 2021 (Sosiaali- ja terveysministeriö 2021), but companies were not mandated to enforce remote working. Still, at least in the case company, more than 95% of the employees had chosen to work remotely. One could imagine this continuing post-pandemic, as most workers reported that they would prefer working from home at least occasionally in the future (Eurofound 2020, 3). Therefore, the focus on face-to-face contact in the blueprint model appears slightly less useful for the particular situation of the thesis project.

If one were map an accounting process based on the blueprinting model, one would have to bypass the onstage phase altogether. As most – if not all – communication takes place via email and other telecommunication methods, face-to-face customer service is a rather rare occasion. In the case company, all major departments would be considered “back stage” components in the model: accounting and accounts receivable, for example. Hence, the lines of interaction and visibility would essentially be the same. The supporting elements are all the ICT systems that enable the services: accounting software and communication platforms. The “physical evidence” refers to anything tangible that might have an impact on the customer (Bitner et al. 2008, 74). In accounting, this could be the financial statements, for example. A more routine instance would be emails sent to the customer.

Next, let us consider why an organization would set out to map their processes. As already mentioned while discussing CFPMs, a process map makes work visible. In addition, a good number of reasons to map processes can be found. Workers are able share their “mental models” about the work they do, and better understand why work is being done and to whom. Furthermore, the visibility of work enables improvement, measurement, and monitoring aspects of work. Communication and transparency are improved within the work organizations. (Damelio 2011, 32.) If an organization is willing to earn certificates for their processes, detailed maps should prove very helpful. According to the International Organization for Standardization (ISO), getting started with standardization requires understanding of the organization’s key processes (ISO 2019, 5). A so-called “process approach” is in fact one of the quality management principles of the ISO 9001 standard. It is claimed that understanding interconnecting activities leads to more consistency, predictability, and efficiency (ISO 2019, 3).

Moreover, one should not rely on mere written process descriptions for that understanding. This is especially true for services due to their intangibility, variability, and perishability. Mere written descriptions fall short by being oversimplified and incomplete (Bitner et al. 2008, 68). Hence, the graphical illustrations reign supreme in gaining understanding of the processes.

Finally, let us take a look at how processes might be improved. According to a handbook by the American Society for Quality (ASQ), once processes are understood and charted, one should look for opportunities to simplify the processes. In other words, one should try and reduce any waste: unnecessary steps such as needless inspections or repeated activities. The key question to ask is whether or not a process works, if a step is removed altogether. (ASQ 1996, 19.)

A comprehensive take on improving processes is offered by Boutros and Purdie (2014). Process improvement begins with the process owner: someone who is responsible for comprehensive management of the process. Any change in a process should go through them. A process owner does not need to be a manager, but they are leaders within the organization. (Boutros & Purdie 2014, 39.) Process improvement should be an on-going effort, and usually the aim is to increase profits, reduce costs, or speed up operations. Furthermore, the process

improvement should achieve these goals so that they are consistently and efficiently achieved. This principle yields indirect benefits down the line, such as improved employee morale, better customer satisfaction, and reduced interdepartmental conflict. (Boutros & Purdie 2014, 46–47.)

Process maturity is a concept used to discuss the level of organization in a process. Five levels of maturity are used to benchmark the performance of a process. Level 1 means low maturity: processes are not documented, and the process environment is dynamic and unstable. The focus of the organization is to do whatever it takes to get the job done – this might sound familiar to the initial situation in the case company. Level 3 processes are “integrated”; sets of documented, standardized processes are firmly in place. Some improvement is bound to occur over time. The final stage of maturity is level 5, where processes are “optimized”: they are cross-functionally integrated and continually improved. Metrics are used to measure and analyze the performance. (Boutros & Purdie 2014, 60–61.)

Some of the process improvement tools offered include Kaizen and Lean Six Sigma. Kaizen is a Japanese approach which aims to improve processes in a rapid fashion over a short period of time. Improvements are generated during “Kaizen events”, in which process stakeholders come together to discuss, analyze, and implement solutions. The key idea is continuous improvement – hence, a process can never be 100% optimized. The Lean Six Sigma method is focused on minimizing variation in a business process. The goal is defect-free performance. Steps in Lean Six Sigma project include identifying root causes of a problem, identifying non-value adding activities, standardizing processes, and coordinating metrics. (Boutros & Purdie 2014, 114–119.)

2.4 Working methods and data

The main working methods of the thesis project were observation and informal interviews. Qualitative data was collected. The observation method requires the researcher to immerse themselves in the setting where the data is collected. It can be either structured or unstructured – the difference being whether there are

pre-determined variables or objectives, or not. Observation was quite likely the most suitable method for this study, as direct access was required to the sources of the research. In general, flexibility is also an advantage of the method. On the other hand, observation can be time-consuming. Furthermore, observer bias must be acknowledged, and observer's influence on the sample group should also be considered. (Dudovskiy n.d..)

As the author had already begun 'immersing' himself into the research environment, he was able to observe the processes from within the company. This constituted as a part of the data collected, while additional data was procured through interviews with employees in charge of processes. As the study had a clear, predetermined objective, the research can be further categorized as structured observation. In order to form a clear picture of the processes in question, the research was conducted over several months. Hence, the time-consuming aspect of the observation method was not an issue. The research questions were to be answered through observation and interviews with the process owners – the key activities, touch points, workflow patterns, and ways to improve the process were to be determined with aid from literature. Data collection was done rather informally. For example, no research journal was kept, apart from notes made during interviews. Instead, findings were validated by feedback from process owners once maps were drawn.

Since business environments are ever-changing, flexibility and adaptability are also expected when doing research in this environment. Observer bias is rather insignificant due to the nature of the study: processes occur in a certain manner, regardless of the observer's presence or point of view. Whether or not the observer is able to document the process accurately is dependent on the researcher's ability. Of course, processes can be mapped out in a different fashion by different observers, but the data itself is not impacted by the observer.

As suggested by the commissioner, CFPMs served as a starting point for mapping the processes. As the project progressed, it was found that CFPMs seemed to be an optimal choice for visualizing these processes given the purpose and objective of the thesis. As mentioned, stakeholder touch points were one of the points of focus, as well as supplier-customer relationships. These can be greatly

illustrated with CFPMs. Since the focus was on accounting processes, a relationship map would have been far too vague for this purpose. On the other hand, flow charts would have been too detailed – however, they could be a natural way to further the project afterwards. The service blueprinting model was dismissed, as it appeared to be geared toward hands-on customer service, in contrast to knowledge work. CFPMs are not restricted by this approach and therefore more suitable for the purpose.

In the data analysis phase, it was determined what information was relevant for each process. Based on the data, CFPMs were devised in order to achieve the objective and purpose of the thesis. Feedback and development suggestions were collected from the employees in charge of the processes in order to determine the accuracy and suitability of the results and improvement ideas

2.5 Thesis structure

Thesis is divided into four main chapters: introduction, background, findings, and discussion. In the introduction chapter, the topic and the case company were introduced. The background section has discussed the topic in more detail, presented the research questions alongside the objective and purpose, covered the relevant theory by going over literature and other sources, and stated the intended working methods. The findings chapter will present the observations that were made process by process, while offering insights and suggestions on improving the processes. Maps of the current processes are shown alongside revised process maps where possible. The final chapter will discuss the thesis objectives in relation to the findings, recommendations for the future, and what aspects of the research could have been done differently.

3 FINDINGS

Prior to proceeding the data collection and analysis, it was determined which processes should be mapped. This was done in cooperation with the process owners and management. Five major processes were chosen: adjusting journal entry processing, period closing procedures, cost tracker creation, fixed asset accounting, and State Treasury reporting. Each process will be briefly introduced on a more general level before diving into case-specific details. These processes were chosen partly because they include some of the major activities for the case customers, and partly because these had standard workflows that are suitable for mapping. As already briefly mentioned in the introduction, the case customers include three medium to large organizations, which have outsourced most of their A/R, A/P, payroll, and accounting functions to the case company. The operating systems are shared across customers, and the key personnel in charge of each process are also the same within the functions. Hence, even though there are minor variations, the large-scale processes are very much the same for each customer.

3.1 Adjusting journal entries: process mapping

The first process we shall look at is handling adjusting journal entries for the customers. Adjusting journal entries are generally used for accruals, deferrals, and corrections in accounting (Corporate Finance Institute n.d.). In the case company, these are mostly prepared by the customers' financial specialists and then sent to the accounting department to be entered into the accounting system. The total volume (across all case customers) of adjusting journal entries made per month ranges from 150 to 200.

Based on observations and interviews, a CFPM of the process was constructed (Appendix 1). One should note that the chart is depicting three separate paths of work – four, if you include the paths leading to and from the systems specialist. The different paths are shown by the colours of the arrows. In the very middle, an intersection is shown that leads to either "orange" or "blue" work path.

From the accounting point of view, the process begins as a need arises to make an adjusting journal entry. In this case, the needs have been for example depreciations, cash sales, internal transactions, accruals, and corrections. The process is not, however, necessarily initiated by the customer. Accountants may, for instance, notice an error in the records and initiate the process for making the adjusting entry. Furthermore, some personnel at the customer's end have access to making the adjusting entries themselves. Hence, after the need is recognized and an entry is devised, there are three ways the process can proceed. If the customer has access to the required software, they will attempt to submit the entry themselves. If they do not have access, they will send a service request through the case company's service management system. If the entry is devised by the case company's accountant, they would make the entry themselves.

First, let us consider the line of work of the customer making the entries themselves. If everything goes well, they will make the entry and send it for final approval. Entries are approved by the customer's head of finance, who are employed by the customer, not the case company. However, if a problem is encountered during the entry, they would most likely consult the case company's accounting department through the service management system. Then, either the entry is finished by the accountant, or the required information is passed back to the customer, who would then complete making the entry. If the accountant makes the entry, it is also sent the customer's head of finance for final approval.

Next, let us consider how things proceed when a customer does not have access to the software where entries are made. They will send their entry through the service management portal, where it is picked up by the accountant. After the entry is made, it is sent for approval the same way as above. Finally, the simplest procedure: if the entry is devised by the accountant, they will simply enter it and send it for approval.

Quite often, faulty entries make their way into the accounting records without being noticed. Unfortunately, those entries that have been approved, cannot be modified later. As per the service contract, it is the accounting department's re-

sponsibility to be vigilant of such mistakes and make correcting entries when necessary. Hence, it is a part of the whole adjusting entry process. However, there does not appear to be a system of supervision in place: mistakes are noticed, if there is a reason to look for them. For example, mistakes in internal account entries for one customer were noticed because the discrepancy showed up in quarterly reports. These corrections can be considered to be another need to make an adjusting journal entry: that way, the process starts from the top.

The process requires three different software: the base accounting software, a web portal for entering the adjusting journal entries, and the service management system. The first two are part of the same package from a software supplier. These systems have admin users (referred to as “systems specialists”) from the case company. The service management portal is from the same supplier, but it is used organization-wide for all customers. Therefore, if the customers had software issues, they would approach the systems specialists through the service management system. The case company accountants were likely to approach systems specialists informally through internal channels – even though the service management system should be utilized.

3.2 Adjusting journal entries: process analysis

Judging merely by the outlook of the diagram shown previously, one could consider the process rather confusing. As mentioned in the theory section, one of the key principles in process optimization is reducing waste. More handoffs mean more potential idle time, since one has to wait for the next actor to proceed with the activity. Hence, less handoffs lead to a more optimized process. In this case, the process is bounced back and forth from the customer to the accounting department rather unnecessarily. This is likely to cause lack of ownership in the process: more handoffs imply that there is always “someone else” who is responsible. A straight-forward fix would be re-adjusting the ‘location’ of the work, as currently most of the work is done at the customers’ end. With an aim to reduce waste, a revised process is depicted on appendix 2.

Evidently, a fair number of mistakes in the entries is also due to the customer creating the entries, and a lack of supervision between the person creating the entry and final approval. The approval phase appears to be merely a formality required by the system, and the head of finance might not be able to pay attention to the level of detail that is required in hands-on accounting. Hence, mistakes are likely to slip through.

Therefore, a fair suggestion would be to shift the focus of the work to the case company's accounting department. In fact, this is already done for a separate customer in the company, and the arrangement appears to work well – although in that case, the volume is significantly higher and desktop robotics are utilized to cope with the amount of entries coming in. In practice, this means that all adjusting entries go through the case company's accountant before being entered and sent for final approval. Primarily the change is directed to fix the workflow, but this would likely reduce the number of mistakes as well, since the case company's accountants are familiar with practices of multiple customers instead of just one. Hence, they would be able to notice more easily if something is out of order. Plus, the process owner would have a better sense of process ownership, as they would be the ones primarily responsible for its performance. Furthermore, non-value adding activity is reduced as less time is spent juggling information back and forth – in other words, the process would have less waste.

Based on the outlook of the new CFPM, the revised process appears 'cleaner' and more focused. However, one should also consider practical limitations on how much resources can be allocated to the activity. In other words, do the case company accountants have enough time to enter each and every adjusting journal entry. As with any implementation of a model, feedback should be collected to revise and fine tune the arrangement – for instance, in accordance with the Kaizen method.

3.3 Period-closing procedures: process mapping

For all of the case customers, monthly accounting periods are closed according to a pre-determined schedule. Usually, the period closing takes place one to two weeks into the next month. Once a period is closed, no more accounting entries

can be made for that period, and reporting data is ‘locked’ in – although, exceptionally, a period might be re-opened if a significant correction needs to be made. In this case, the schedule is set by the customer. Usually the closing schedules for the whole year are determined in the beginning of the year, and the timetable serves as a starting point for the closing process for any month. The schedule states the closing date for accounts receivable and payable, after of which new invoices cannot be entered for that period. This date is some days before the actual closing, as to leave time for accountants to run final checks prior to closing the period.

The first activities in the accounting process are running error reports in the accounting software. The errors can be caused by unmatching cost trackers, such as cost centres and internal orders, or by out-of-balance transactions (where debit and credit values are unequal). Essentially, these errors are possible due to unoptimized software; transactions coming through from connector applications are ‘forced’ into the accounting software, even though the entries might have errors.

Once errors are known of, they must be corrected. Simple errors might be just a typo which can be fixed by checking the base document of the transaction, such as the sales invoice. The audit trail should show the origin and the nature of the transaction. If, however, information is not available for some reason, accountants must inquire accounts receivable and payable for further information. In some cases, the only way to determine the correction is to contact the customer. As inquiries might take days to be answered to, these error checks are done many times over the course of the month – the check prior to period closure is just the final confirmation that everything is in order. Similarly, accountants are making sure that any data that is brought in via a connector is transferred correctly – for example, salary data from a payroll software. This is not a period closing procedure per se, as data can be transferred all month, but the data for the period that is being closed must be complete before the closing.

The next step in the process is the ‘sub-process’ of VAT calculation and reporting. First, a report is run on the accounting software to determine whether the total

VAT calculation corresponds to the sum of the individual entries. Rounding differences generally cause a slight, insignificant error. This can be neglected, but more significant deviations should be investigated and corrected. Next, a VAT report is generated in the software, which is then compared to the corresponding balance sheet accounts to make sure there are no discrepancies. A spreadsheet is used to gather VAT liabilities and receivables by tax rate, as this is required in the official VAT report. The spreadsheet template also has sum functions that serve as a verification that all numbers add up to correct amounts. Furthermore, it is a recommended practice for maintaining a proper audit trail (Kirjanpitolautakunta 2021, 16–17). A separate spreadsheet is also very useful, if corrections need to be made to VAT period that has been already closed.

Once the numbers are determined to be true, an adjusting journal entry is prepared to clear the balances from the monthly tax liability and receivable accounts. Finally, the official VAT declaration is done in the tax administration's MyTax service. If tax payments must be made, the payment is confirmed by the customer prior to department of payment transactions completing the transaction. One should note that the VAT reports are checked throughout the month – similar to the reports on entries with errors. Hence, there should be no surprises on the final day of the period.

The very final step in the closing procedure is actually closing the accounting periods in the accounting software. The software has separate periods for financial accounting and management accounting, but generally there should be no reason to not close them at the same time. Once closed, financial reporting data for the period is available for the customer in its final form. Usually, if there had been a significant mistake, it would have been noticed on the reports. If necessary, the period would be re-opened, and corrections made. However, generally it is preferred to avoid opening the periods, and corrections are made with adjusting journal entries on the following period.

Based on observations of the process, a CFPM was drawn (Appendix 3).

3.4 Period-closing procedures: process analysis

Based on observations and the figure drawn, it was noticed that the process is a rather linear and rigid one. In terms of flow, no significant waste could be observed. However, interviews with process owners revealed room for improvement in terms of the quality of the process. Some supplementing activities that should be considered in the future include reconciliating data on the GL with A/R and A/P records. While this is not necessarily required in monthly accounting, this can be requested by auditors in the future, and doing it consistently throughout the year can make the audit far easier. Furthermore, the accounting software has a ready-made report for 'missing' statements, which helps the reconciliation process without requiring much effort.

Another supplementing activity to improve the accrual basis of the accounting process would be to create accruing or deferring entries for wages, which have a payment date during a different period than the earning period. This would make the reported data more accurate. Until now, this had been neglected for these customers. However, other customers of the case company are implementing this, with set limits on what amounts are significant enough for making the accrual entry. Furthermore, as with some other customers, passing-ons could be executed monthly as a part of the period-closing process. In accounting, passing-ons refer to larger costs being channelled to multiple smaller sub-units – it is also called cost allocation (AccountingTools 2021). Passing on the costs every month would improve reporting accuracy and assist financial planning for the customer.

A few other accounting activities could still be added for every period – or every quarter, if desired. As per interviews with process owners, it would be ideal to prepare the cash flow statement regularly, even though it is not required until the year-end close. Doing it consistently would ease the year-end process. Furthermore, the customer would be better informed of their financial situation, as the cash flow statement gives great insight to an organization's liquidity situation. Profit or loss could be transferred onto the balance sheet every period instead of every quarter, as to make reporting data more relevant – even though it would be optimal to have the accounting software execute this automatically. Depreciations

could be entered every month to better the accrual basis of the accounting process. Overall, all the supplementing activities aim to create better value for the customer in the form of higher quality accounting.

The work flow itself would not be shifted around, and hence no revised CFPM was drawn up. However, the additional activities should be organized as such: accruals, passing-ons and depreciations should be entered before error reports are run, and the reconciliation of A/R and A/P should be done once errors have been corrected. Profit or loss transfer would be done just before closing the period, and the cash-flow statement would be prepared once the period is closed. Once again, one must consider time and resources available, as all these require extra effort from the accountants.

3.5 Cost tracker creation: process mapping

Management accounting relies on the ability to track costs at different levels of the organization. For the case customers, cost tracking is done with elements such as cost centres, internal orders, WBS elements, and internal sub-functions. Here, these will be referred to as simply “cost trackers”. Once they are established in the accounting software, costs can be allocated to them and reports can be extracted for individual tracking elements (in fact, revenues are also allocated to these trackers but for simplicity, we shall focus on costs).

In this case, the customer initiates the process by expressing a need to track costs in a certain way. This request is received in the service management system, and an accountant can create the tracking item in the software and determine the required features. For example, costs entered to a certain GL account must have a cost centre from a certain range; these are called combination rules and they fundamentally cause the errors that were discussed in the period closing section. Once created, information on new cost trackers must be relayed to other departments: A/P and A/R must know which cost trackers to use when entering invoices to their system, and payroll must know which cost trackers to use for wages of different departments, or even individual employees.

As this whole process is quite straightforward, the CFPM (Figure 5) turned out very concise.

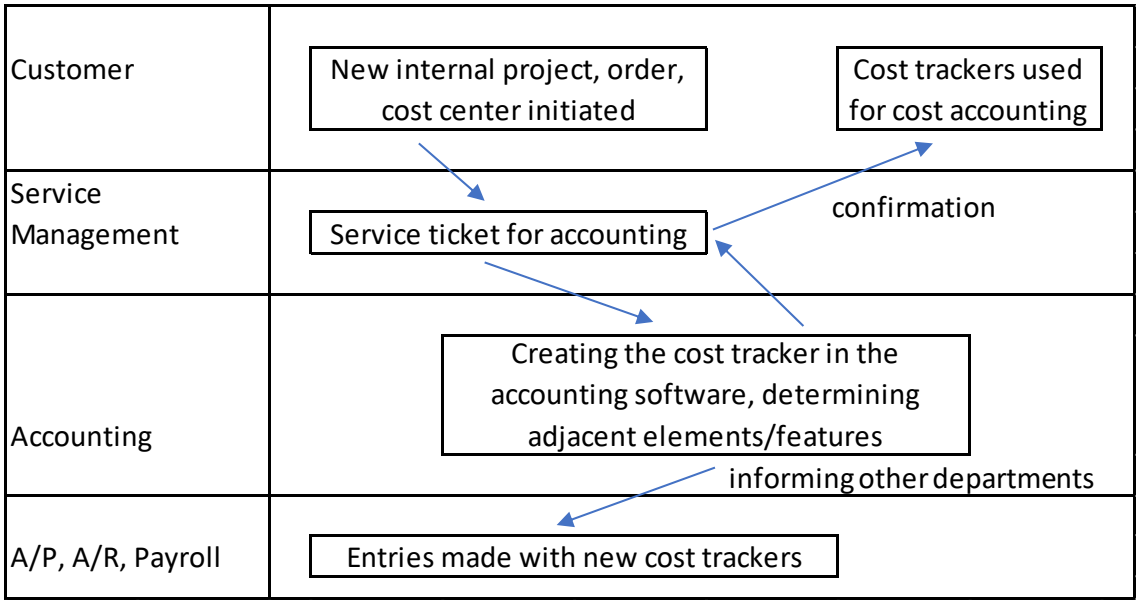

FIGURE 5. Cost tracker creation CFPM

3.6 Cost tracker creation: process analysis

The process flow itself does not appear to have room for improvement, due to the limited number of activities. However, an additional activity to improve information retention and communication would be to establish a shared database for all active tracking elements for each customer. A shared spreadsheet should suffice. Other departments would be able to utilize it, for example payroll would always have the up-to-date cost centres for each employee's salary entries. Hence, there would be less errors for accountants to correct, and the overall accounting process should become more fluent with less effort exerted on back-tracking others' work.

Furthermore, when a cost tracking unit is discontinued, this information could be updated onto the spreadsheet, and replacing cost trackers could be added as a note. A centralized collection of relevant data is clearly superior to separate, possibly even local collections. To take this a step further, a web survey could be built for customers to fluently inform the whole company at once when a cost tracker is created or discontinued. An automated workflow could even be scripted

to update the spreadsheet or database automatically. Hence, wasteful administrative work would be minimized, and accountants would have more time for value-adding activities.

3.7 Fixed asset accounting: process mapping

The accounting law states that the cost of an asset that is expected to generate revenue over many years should be distributed over the asset's expected lifetime. Such assets are referred to as fixed assets – in contrast to current assets. As such, distinct processes are in place for fixed asset accounting. The recognition of the acquisition cost over time is called depreciation, and it is shown in the income statement of an organization. Showing the remaining cost under fixed assets on the balance sheet is called capitalization. (Accounting Act 30.12.2015/1620.)

When the customer in this case decides to capitalize an asset, the accounting department must be made aware of its expected life cycle and planned rate and method of depreciation. This is done via the service management system, and related service tickets are assigned to accountants. Due to limitations of the main accounting software, a separate software is used for fixed asset accounting, from which entries such as depreciations are transferred over to the main software. The creation of the asset in the fixed asset software is done manually based on information given by the customer, or by transferring respective entries from fixed asset GL accounts over to the fixed asset software. The software is set up so, that all capitalizations must go through 'on-going' accounts before being transferred over to the correct fixed asset GL account. The transaction on the main accounting software is then moved over to the asset accounting software, where functions such as depreciations or asset disposal are performed more fluently.

An investment project progresses in a similar way. Investment projects in this case mean – for example – construction projects that are considered fixed assets in accounting, even though the project is on-going. Entries on these are not depreciations, but costs accrued for that project. On-going projects' transactions are transferred over to the fixed asset software as above. Transfers are done through

an intermediate application, which can cause errors that need to be resolved individually. As an investment project concludes, a separate request is made by the customer to 'finish' the on-going project statements (the fixed asset software has 'statements' for each asset and parts of on-going projects). In other words, the on-going investment is turned into a finished fixed asset. Again, these entries are then transferred to the main accounting software. As a result, the GL account of the investment is shifted from the on-going investment account to its respective fixed asset account.

An adjacent process to the main work flow is running a depreciation forecast report on the fixed asset software. This report can be used as source material for financial forecasting and planning at the customer's end. Depreciations itself are run on the fixed asset software as per the schedule determined by the customer. As mentioned, these entries must be transferred over to the main accounting software. Similarly, if the customer chooses to scrap, sell, or recognize revaluation of an asset, the function must be first executed on the fixed asset software. Then, the entries can be transferred over to the main software. The final stage of the whole process is to reconciliate balances of the asset software statements with GL accounts on the main software, in order to make sure no errors have been made in the process.

Based on the current observations, a CFPM was devised (Appendix 4). At this point, the "service management" entity was omitted from the figure, as including it would not provide anything insightful. All communications between the customer and the accounting department would go through the service management platform by default.

3.8 Fixed asset accounting: process analysis

While assessing the process, one should note that the fixed asset management software was adopted very recently, and processes around it are still finding their course. In other words, this process is slightly less mature compared to the other ones presented here. However, one way to improve the current process would be to establish a semi-automated web survey on asset creation or investment

project updates – as was suggested with the cost tracker process. This way, the necessary information could be received in a standard format, and a desktop automation could be built to reduce the time spent on mechanical data retrieval and processing. The intention would be to streamline information flow and allow more time for value generation.

Furthermore, one would ideally have fixed asset accounting integrated under one software. This would reduce wasteful effort in moving data back and forth. Obviously, however, this would require changing the software in use, and possibly even the system provider. Generally grand changes like this are not done for light reasons, and the overall cost of having two separate software might in fact be less than acquiring a new one. Furthermore, the current main software was adopted very recently. Stability and steady development are most likely preferable to the customer in this aspect, so frequent system changes are avoided.

3.9 State Treasury reporting: process mapping

As some of the focal company's customers are municipalities and joint municipalities, they are required to separately report data about their financial performance to the State Treasury of Finland. The reporting is done in the State Treasury's online service in accordance with instructions given by the Ministry of Finance. (Valtiovarainministeriö 2021, 1.) The reporting is done in a standardized format, generally as eXtensible Business Reporting Language (XBRL) files (State Treasury 2019). There is total of 12 different reports and two of them are sent quarterly (State Treasury, 2021).

The reporting process begins once the State Treasury publishes its annual reporting schedule. The required data on the report templates is also subject to change. As this information becomes available, accounting department and the customer can begin figuring out what data needs to be collected by the customer, and what is left for the accounting team. Generally, anything that can be extracted from the accounting software is collected by the case company's accountants. The accounting software has pre-made reporting functions for certain reports, and the data is automatically transformed to the required format. If more detailed

or specific information is required, it is more efficiently collected by the customers themselves.

Once all data has been gathered, everything is compiled and transformed to the required format – some reports allow .csv-files as well, but XBRL is favoured. The reports can be tested on State Treasury's testing service before uploading it on the official platform. With reports that include a complete balance sheet and an income statement, the data being reported should be compared and reconciliated with the income statement, balance sheet, and investments of the reporting period. Once uploaded, the reporting service automatically generates remarks on the data based on comparisons with previous reporting periods. For instance, remarks can be about significant changes of certain numbers. These remarks must be commented on, and while the customer is primarily responsible for making the comments, in some cases the accountant is better suited to make an informed comment. Hence, the accountants can prepare a preliminary comment, which is later confirmed by the customer. Finally, as all required comments have been made, the customer will give final approval to the report, and it will be considered complete by the State Treasury. Based on observations and interviews, the CFPM on this process was constructed (Appendix 5).

3.10 State Treasury reporting: process analysis

While the base process appears quite fluent, the real challenge lies in collecting the data. The required data can be very detailed: for example, one of the reports require data on "customer payments on daily surgical operations of somatic special healthcare", which of course is quite detached from the accounting domain. Even though the hands-on data collection is done at the customer's end, the overall process and scheduling are considered to be the case company's responsibility. Hence, depending on which of the 12 reports is being prepared, the accounting team must make sure that data collection is started in a timely fashion by the customer. Currently the main problem is that most of the reports are being done for the first time – at least by the current personnel. Hence, there are no established processes for gathering the required data for a given report. It would

be recommended to develop standard practices and timetables for preparing individual reports, as the team becomes more accustomed with State Treasury's requirements.

Using the test service is more of a formality for most reports. Some reports mandate running the test prior to reporting – hence, it must be included in the overall process chart. However, once the reporting format has become familiar for the accountant, using the testing service becomes redundant.

3.11 Findings: a summary

As a recap, table 1 shows suggested changes per process. As one can see, most recommendations are more focused on improving the 'insides' of the process, rather than the workflow. At this point, let us also consider the maturity of the covered processes. As mentioned in the theory section, level 3 maturity implies processes are documented and standardized. Since process charts were successfully constructed for all of the ones in question, one could argue that this level has now been reached. Moreover, with improvement recommendations made, process improvement is due to happen over time. As an exception, the fixed asset accounting process should be considered slightly less mature for the reasons discussed, and standardization will take place once the new system's capabilities are fully adopted.

TABLE 1. Summary of recommendations

Process	Suggested change	Benefit
Adjusting journal entries	Shift in work location	Improved work flow, sense of process ownership
	Additional step of supervision prior to entry	Less errors in accounting
Period-closing	Reconciliating A/R, A/P records with accounting	Improved audit trail
	Implementing more frequent passing-ons, depreciation and accrual/deferral entries	Improved accrual base of accounting, more accurate financial reports
	Preparing a cash-flow statement every period or quarter	More financial data available for the customer, easier year-end close
	Monthly profit/loss transfer onto balance sheet	Improved accrual base of accounting, more accurate financial reports
Cost tracker creation	Shared inter-departmental database	Less entry errors
	Automated web survey for updates on new or discontinued cost trackers	More efficient communication within the company and with the customer, more time available for other tasks
Fixed asset accounting	Automated web survey for updates on asset acquisitions, capitalizations, etc.	More efficent communication with the customer, more time available for other tasks
	Fixed asset accounting integrated under one software	Less time spent on data transfer
State Treasury Reporting	Standard timetables and processes for individual reports	More efficient workflow, reporting done consistently on schedule
	Testing service not used	Time saved

4 DISCUSSION

The first research question of this study was “What are accounting processes composed of for the selected set of customers?”. The sub-questions were stated as “What are the key activities in each accounting process?”, and “What are the key touch points to other stakeholders in the processes?”. Accordingly, the research has uncovered the main activities in key processes of the monthly accounting cycle for the case customers. Based on the data collected from observations and interviews, process maps were devised for processes concerning adjusting journal entries, period closing, cost tracking, fixed asset accounting, and State Treasury reporting. For each process, stakeholder touchpoints became visible on the process maps alongside the activities. As per research plan, feedback was gathered from the process owners to verify the accuracy of the results.

The second research question was concerned with improving the processes once these had been mapped out. As covered in the summary of findings, a total of 12 potential changes were suggested. A significant portion of these improvements were concerned with the quality of the work within the accounting processes. In other words, the changes would be aimed to add and improve on the existing accounting activities. For example, by including cash-flow statements as a monthly task in period closing, or by reconciliating accounts receivable and payable with the general ledger every month. These would benefit the customer through improved financial reports, and on the other hand they would help the accounting department itself to better cope with audits and the year-end close.

The other side of process development was aimed to improve the flow of the processes. Benefits of these changes would include time saved as the amount of waste would be reduced, for example by removing unnecessary activities or by automating certain activities. The most significant changes were offered for the adjusting journal entry process, while other changes were offered for optimizing organizational communication and information flow. Fundamentally, implementing said changes should allow the accountants to spend more time on value-adding activities instead of more routine tasks.

Apart from the benefits already mentioned, let us return to what was intended to provide for the commissioner. While introducing the thesis topic, the intended benefits included increased transparency of the processes, improved communication within the organization, recognizing waste in processes, and providing a tool for onboarding new employees. As has been demonstrated, processes have become transparent as they have been documented with process maps. Some improvements were offered for communication, and wasteful activities have been identified. As for employee onboarding, process maps can be used to introduce work assignments.

Every possible accounting related process was not mapped – the reasoning behind chosen processes was covered in the introduction to findings. However, it must be acknowledged that there remains a large 'blind spot' in terms of accounting process mapping, as the year-end close was not covered. Arguably, it is the most significant process in accounting, since the official financial statements for the year are prepared for publication. However, as outlined in introduction, the process owners were changed once the previous year-end close occurred. Therefore, there is no established process in place at this time, and a process map would be merely a general approximation with very little value to the organization or the customer.

In terms of improving this study, a prototype-phase could have been implemented to determine whether any of the suggested changes would have been practical or beneficial. The maps itself could have been presented to the customers, in order to collect feedback from their perspective. For example, do the maps make sense from their point of view, or are there any activities that they would consider necessary to add.

Hence, there is still a great deal of work to be done with process mapping and improvement. As said, the year-end close is a major process that should be mapped in the future. Moreover, the current processes that were mapped out should be constantly improved and consistently documented – potential methods were covered in the theory section. For instance, performance metrics should be designed and put in place to track success of potential changes. More detailed maps such as flow charts could be built to fully pick apart a given process. On

the other hand, broader maps of the company-wide processes could be devised – in fact, the commissioner requested an overall map of the accounting process once the thesis project had concluded. All this should, of course, be done in co-operation with the process owners. In the end, implementing changes is dependent on available resources, time, personnel, and system capabilities.

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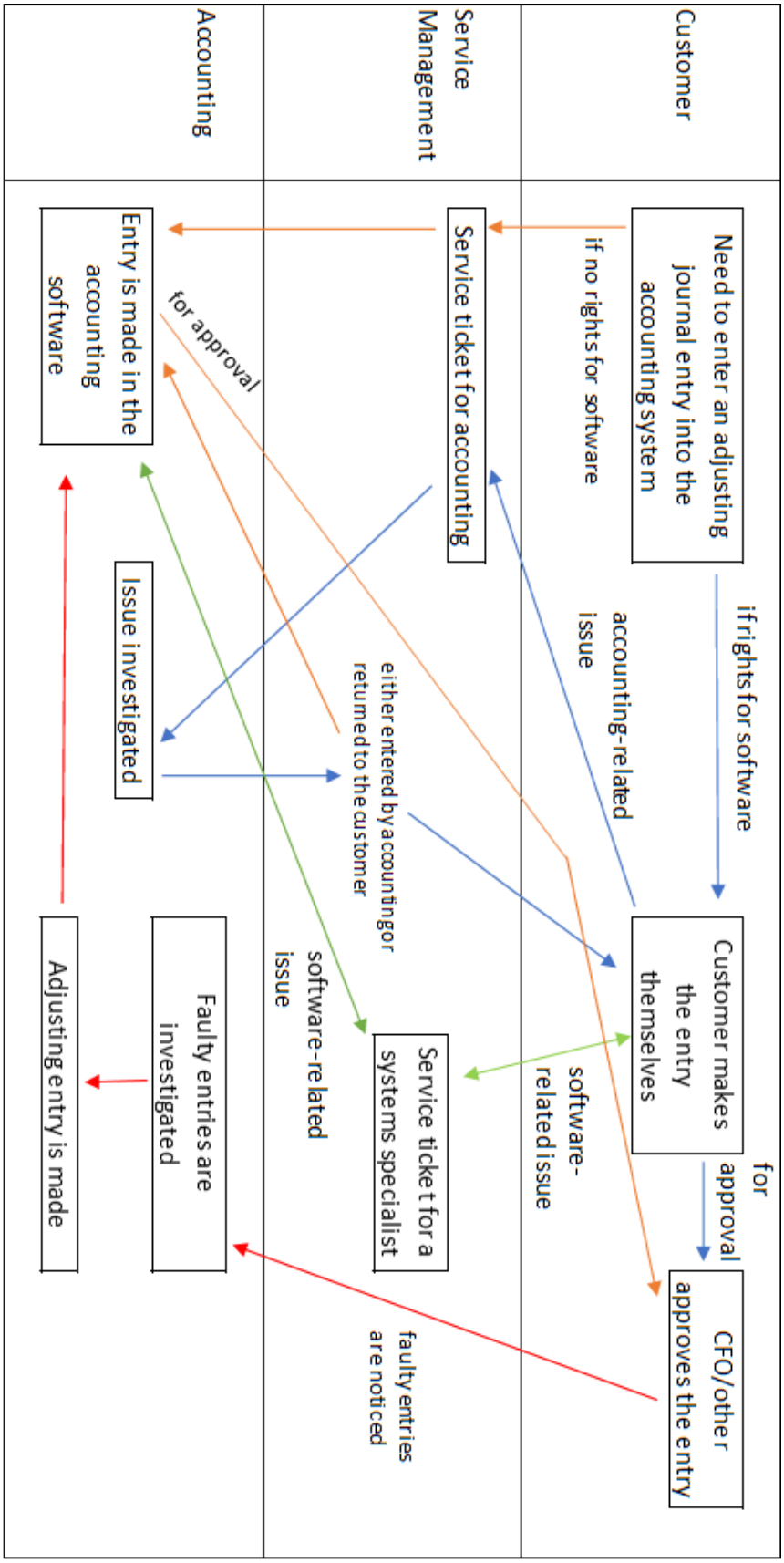
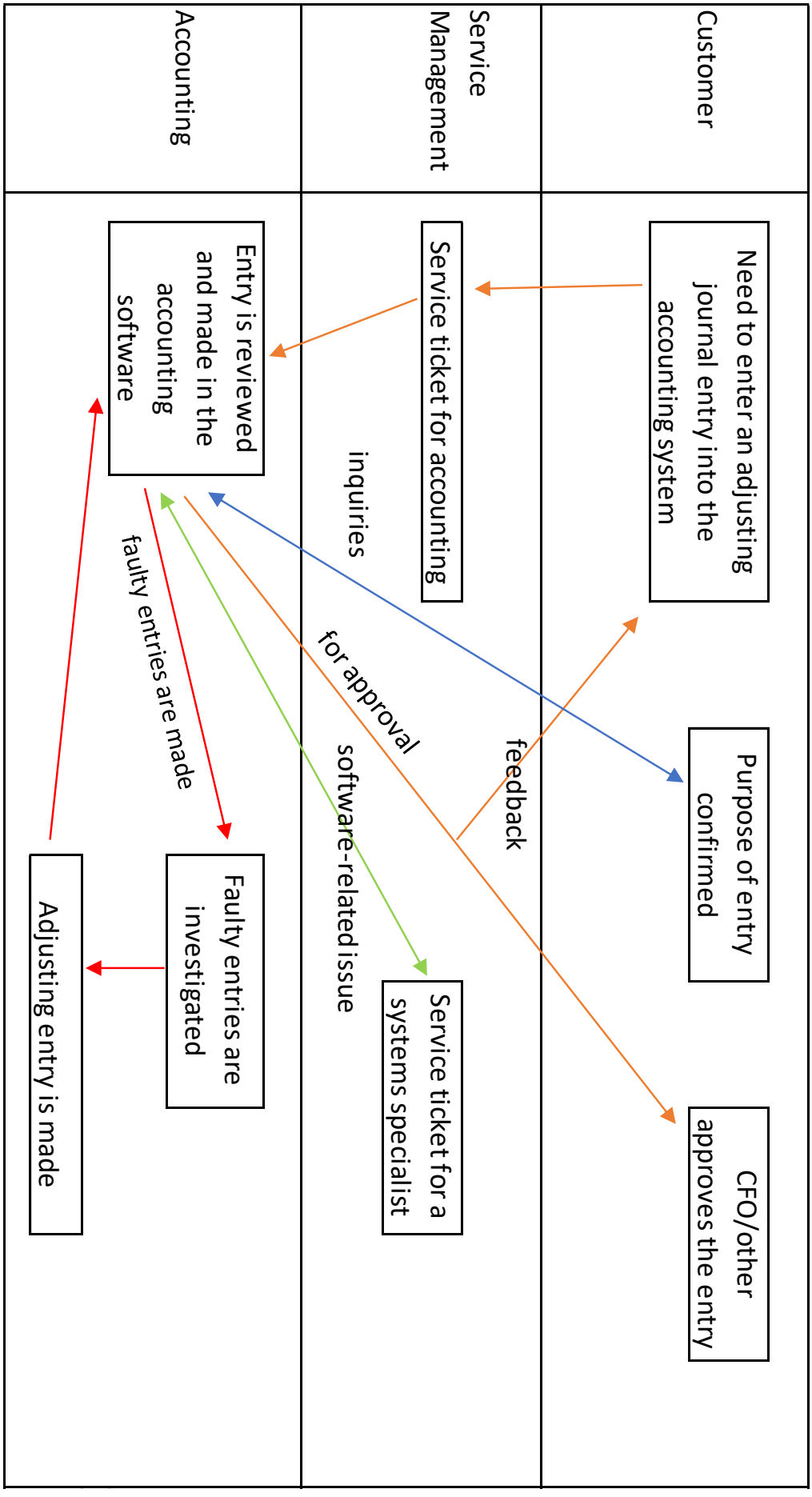
APPENDICES

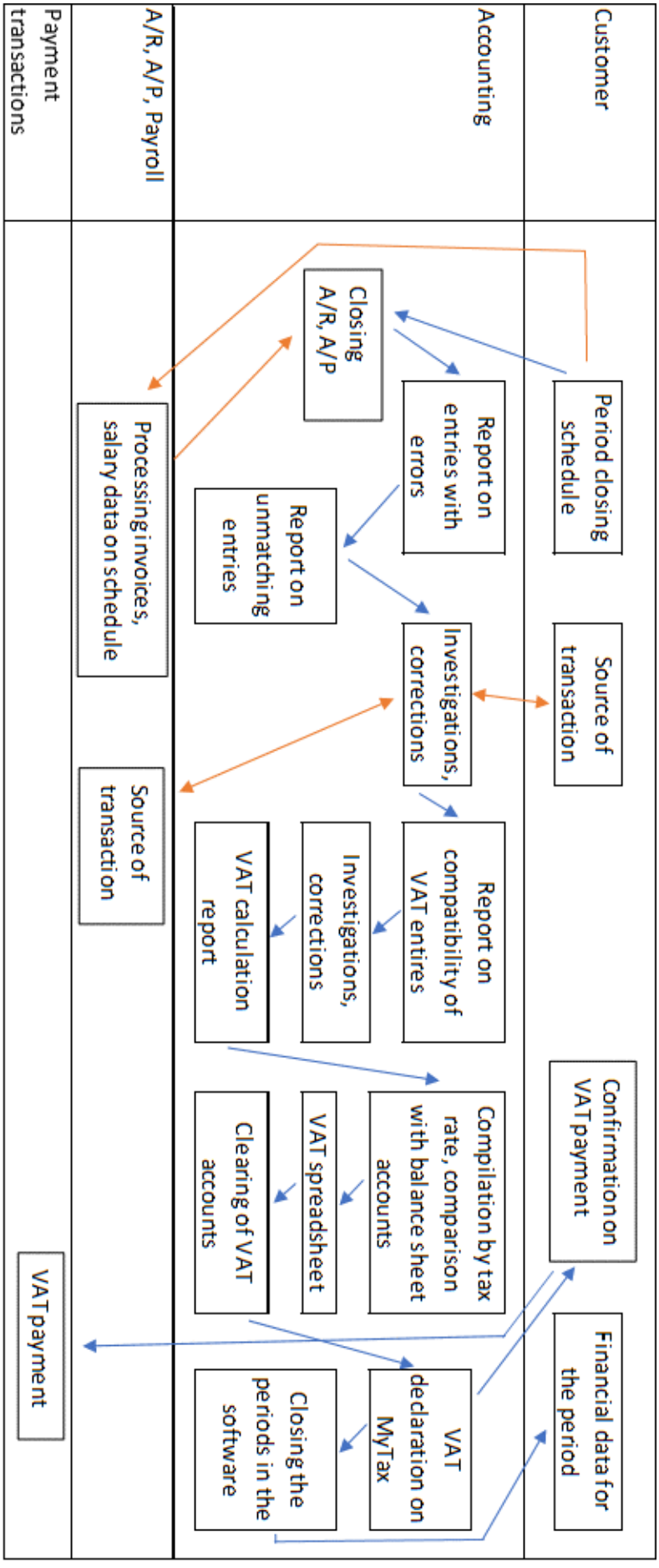
Appendix 1. Adjusting journal entry CFPM.



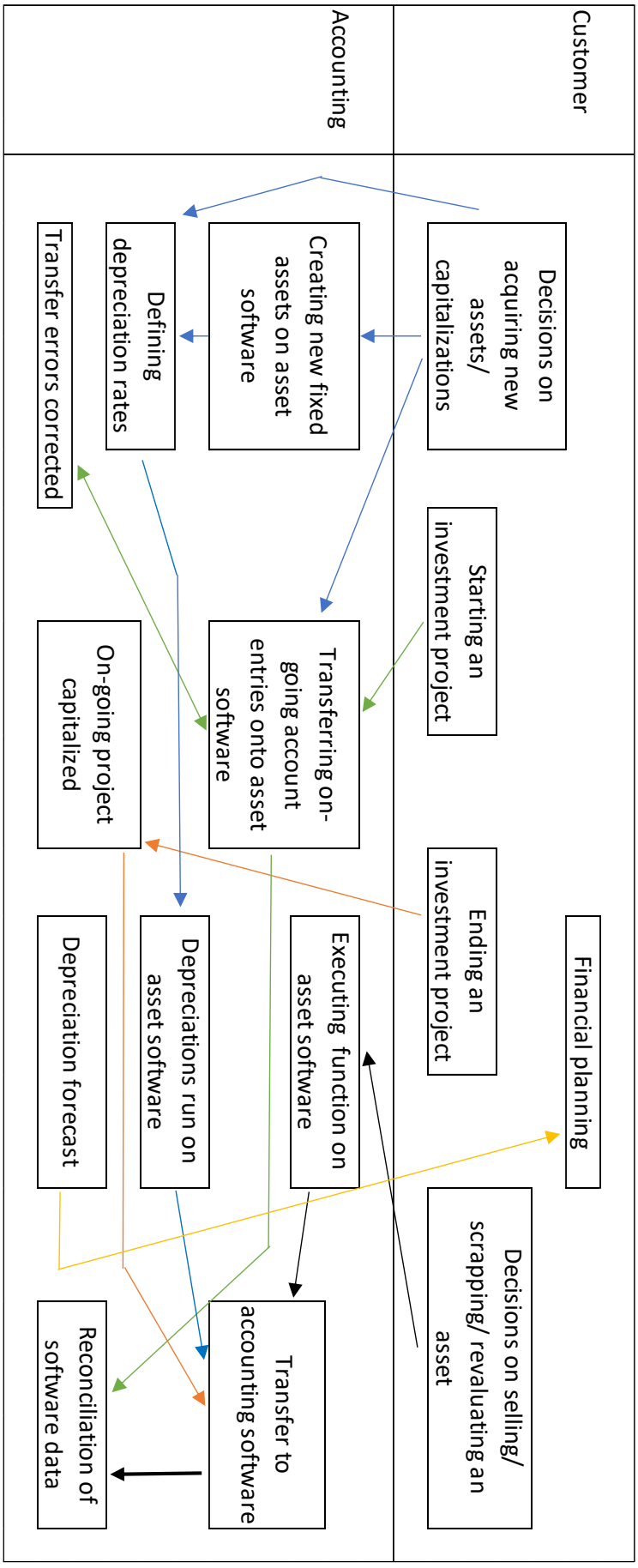
Appendix 2. Revised process for adjusting journal entries



Appendix 3. Period closing CFPM



Appendix 4. Fixed asset accounting CFPM



Appendix 5. State Treasury reporting CFPM