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Developing the Integration Between IT Asset Management and Finance Processes

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Abstract

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The objective of this thesis was to do a mapping of the current processes regarding IT asset management and finance processes and find possible ways to improve them and their integration. The idea for this thesis came from the service delivery unit of the case company as they wanted to optimize and enhance the efficiency of their processes and their integration with one another.

This thesis is based on interviews with the case company's platform owners, the available knowledge and practices as well as insight gathered while working on the thesis. Furthermore, this thesis followed a structured approach that consisted of five stages. During the current state analysis, three key findings were made. The first key finding was that the support and maintenance contracts were handled in a way which could be optimized. The second key finding was that there was a lack of consistent feedback from the accounts regarding the demand forecast. The last key finding was that the case company is unable to forecast OPEX numbers consistently due to the lack of consistent feedback from the accounts.

The outcome of this thesis is a proposal that consists of three parts. The first part is a proposition for enhancing the management of ongoing contracts. The second part is a proposition for enhancing capacity forecasting. The last part is a proposition for enhancing the monthly OPEX forecast update. Furthermore, in the last stage of the thesis further development of the propositions is presented.

The results of the thesis help the case company to manage their ongoing contracts more effectively and transparently, enhance the capacity forecasting of IT assets and make better estimations about their future operational expenditure. In addition, the proposal makes the integration between IT asset management and finance processes more effective.

Keywords: ITIL, ITAM, CSA, OPEX

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Tämän opinnäytetyön tavoitteena oli kartoittaa nykyisiä IT-omaisuuden hallinta- ja finanssi-prosesseja ja löytää mahdollisia tapoja parantaa niitä ja niiden integrointia keskenään. Tämän opinnäytetyön idea tuli kohdeyrityksen palvelutoimitusyksiköltä, koska he halusivat optimoida ja tehostaa prosessejaan ja niiden integrointia keskenään.

Tämä opinnäytetyö perustuu yrityksen alustan omistajien haastatteluihin, käytettävissä olevaan tietoon ja käytäntöihin sekä opinnäytetyön aikana kerättyyn näkemykseen. Lisäksi tässä opinnäytetyössä noudatettiin strukturoitua lähestymistapaa, joka koostui viidestä vaiheesta. Nykytilan analyysin aikana tehtiin kolme keskeistä havaintoa. Ensimmäinen keskeinen havainto oli, että tuki- ja huoltosopimukset käsiteltiin tavalla, jota voitaisi optimoida. Toinen keskeinen havainto oli, että asiakkuuksilta ei saatu johdonmukaista palautetta kysyntäennusteeseen. Viimeinen keskeinen havainto oli, että kohdeyritys ei pystynyt ennustamaan OPEX-lukuja johdonmukaisesti sillä asiakkuuksilta ei saatu johdonmukaista informaatiota.

Tämän opinnäytetyön tuloksena on ehdotus, joka koostuu kolmesta osasta. Ensimmäinen ehdotus liittyy käynnissä olevien sopimusten hallinnan tehostamiseen. Toinen ehdotus liittyy kapasiteetin ennustamisen tehostamiseen. Viimeinen ehdotus liittyy kuukausittaisen OPEX-ennusteen parantamiseen. Tämän lisäksi opinnäytetyön viimeisessä vaiheessa esitetään ehdotusten jatkokehitystä.

Opinnäytetyön tulokset auttavat kohdeyritystä hallitsemaan käynnissä olevia sopimuksia tehokkaammin ja läpinäkyvämmin, tehostamaan IT-omaisuuksien kapasiteetin ennustamista ja arvioimaan paremmin tulevia toimintakuluja. Lisäksi ehdotus tehostaa IT-omaisuudenhallinnan ja finanssiprosessien integrointia.

Avainsanat: ITIL, IT-omaisuuden hallinta, Nykytila-analyysi, Toimintakulut

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List of Abbreviations

ITIL: Information Technology Infrastructure Library. Framework for IT service management best practices.

CSA: Current state analysis

CAPEX: Capital expenditure

OPEX: Operating expenditure

ITAM: Information Technology Asset Management

1 Introduction

The purpose of this thesis is to help the case company's business unit to develop and optimize their integration between IT (Information Technology) Asset management and finance processes. The results of this study are needed by the service delivery team of the case company. The idea for this thesis came from the service delivery unit since they wanted to optimize and enhance the efficiency of their processes and their integration.

1.1 Business context

The case company is a globally recognized provider of IT services and consulting in a diverse range of industries. The company operates on a global scale all over the world. This thesis focuses on the IT consulting business and the managed services part of the company. Specifically, this study concentrates on developing the activities in the operational unit based in Finland.

IT consulting companies are constantly competing to offer their clients the best services and solutions in today's technology-driven world. As a result, the efficient functioning of all the provided resources plays a crucial role in achieving optimal business results.

1.2 Business Challenge, Objective and Outcome

In an IT consulting company, the different service delivery process integration is very crucial for the business. As mentioned, the case company has efficient existing processes for service delivery however, there is room for improving and optimizing the integrations between the processes and the adaptation inside the business unit. This is important since it helps the case company's business unit to operate more efficiently, speed up the delivery times and reduce costs.

The objective of this study is to do a mapping of the current processes and find possible ways to improve them and their integration.

The outcome of this study is a proposal for enhancing process integration and updated process descriptions.

1.3 Thesis Scope and Outline

The scope of the thesis is limited to finding ways to improve the integration between IT asset management and finance processes inside the operation unit in Finland. The focus of this thesis is to collect data related to the current state of the processes, analyse the collected data, and suggest ways for improving processes and their integration.

This thesis is divided into seven sections. The first section is an introduction to the thesis that emphasizes the purpose of the study. The second section of this thesis is dedicated to outlining the methods and materials used in the research. This part also covers the content of each section of the thesis.

The third section covers the current state analysis which describes and analyses the current state of the processes. This is an essential step for identifying the key areas that require improvement. The fourth section is about available knowledge on ITIL that covers the theory and research done in this thesis. This part will focus on the ITIL framework and its practices surrounding IT asset management, supplier management, capacity and infrastructure management and service financial management.

The fifth section is an initial proposal. This is a proposal to the case company that is formed based on the current state analysis and the insight gathered from it as well as the literature review on ITIL and its practices. The sixth section is the validation of the proposal where the propositions are presented to the case company so that feedback can be received for enhancement purposes and further development. The seventh and final section of this thesis is the conclusion. In this section, all the main points of the thesis are summarized, and lessons are presented.

The next chapter introduces the methods and material that are used in this thesis.

2 Methods and material

The following chapter describes the overview of the research design that was done in this thesis. After the research design, the data collection and analysis part of this thesis is presented. The last part of this chapter covers the thesis plan which shows the estimated schedule of the thesis.

2.1 Research design

This thesis is conducted in five different stages. These stages are presented in the figure below. The different steps are specified after the figure.

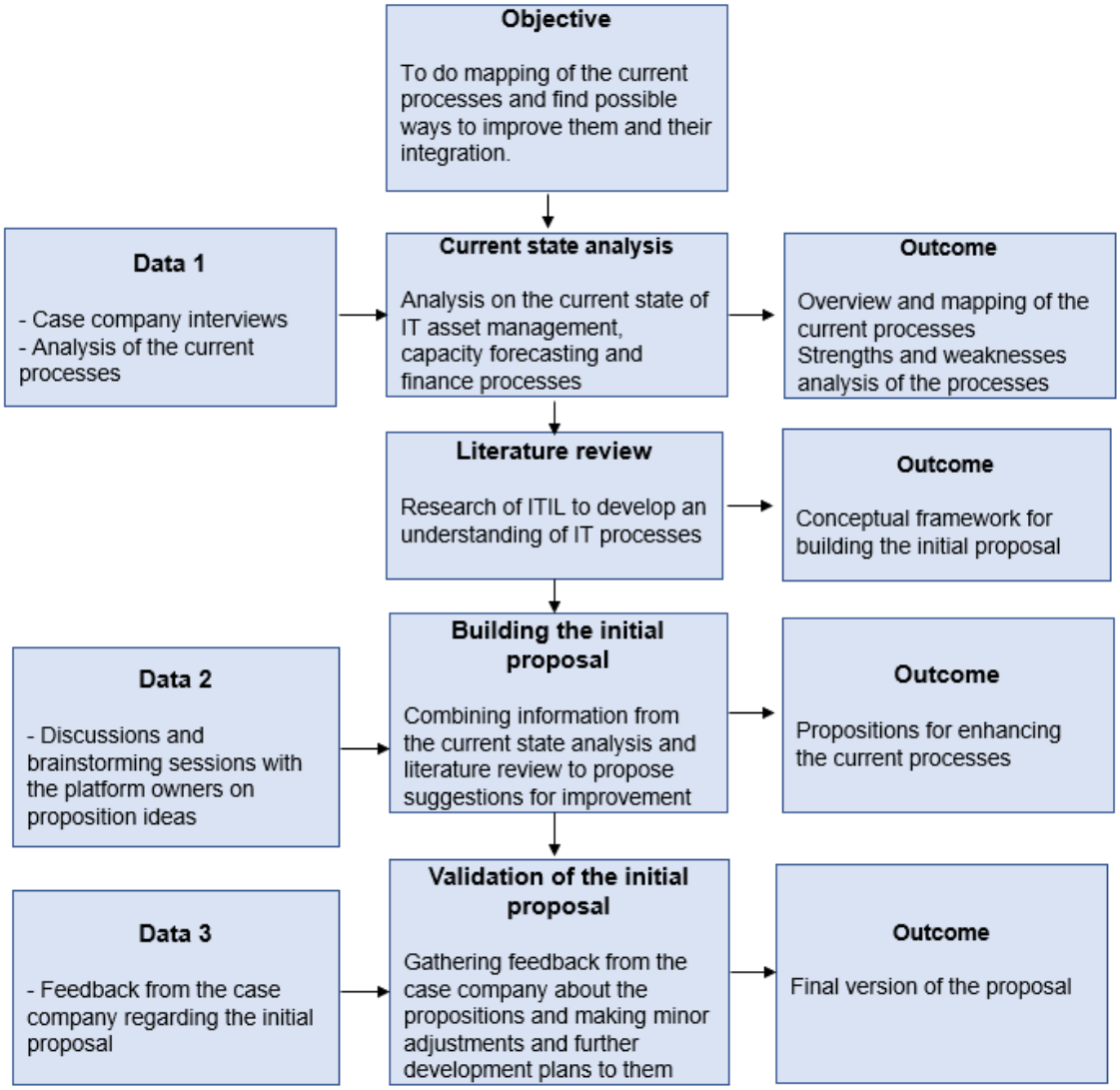

Figure 1. Research design of the thesis

As shown in the figure above, the first step of the study is defining the objective for the thesis. As it is stated the objective of this thesis is “To do mapping of the current processes and find possible ways to improve them and their integration”.

After the objective of the thesis is defined, the study continues to the second step which is the current state analysis. The current state analysis is done by interviewing different technology platform owners from the case company and researching the strengths and weaknesses of the current processes. Furthermore, the current state analysis concentrates on examining the operational methods of the company and evaluating its current processes. The outcome of this step is an understanding of the current integration between IT asset management and finance processes and strengths and weaknesses of it. This step provides important information that is necessary to create the initial proposal.

After the current state analysis is done, the next step is to research available literature related to this thesis. In this study, the literature review focuses on the ITIL framework. By focusing on ITIL, this study aims to gain a comprehensive understanding of the best practices and strategies for managing information technology services. Furthermore, the purpose of this is to gather knowledge to understand different dependencies between IT processes. The outcome of this step is the knowledge required to be able to form the initial proposal.

After the required knowledge has been acquired from the literature review, the study continues to the fourth step which is building the initial proposal for the case company. This is done by gathering and analyzing the data that was acquired from the current state analysis. The data is gathered by interviewing people from the case company and acquiring knowledge from the literature review. Based on the interviews, data collection and literature review knowledge the initial proposal is formed. The outcome of this step is the first version of the proposal for the case company.

The last step of the research design is a validation of the proposal. In this step, feedback and improvement points are gathered from the case company regarding the initial proposal. The proposal is modified according to the feedback if necessary. The outcome of the final step is the final version of the proposal.

2.2 Data collection and analysis

The data used in this study was gathered from multiple interviews and sources to ensure the validity and dependability of this study. The data was collected at two points of the study, the first one during the current state analysis and the latter during the validation of the proposal. Below in the table can be seen the data rounds that were conducted.

	Participants / role	**Data type**	**Topic, description**	**Date, Length**	**Documented as**
	Data 1, for the Current state analysis (Section 4)				
1	Interview 1: Platform owner	Remote interview	Current state of the case company's processes. What challenges are there regarding the existing processes. Possible points of improvement.	14 March, 2023 1 hour	Field notes
2	Interview 2: Platform owner	Remote interview	Current state of the case company's processes. What challenges are there regarding the existing processes. Possible points of improvement.	14 March, 2023 1 hour	Field notes
3	Interview 3: Platform owner	Remote interview	Current state of the case company's processes. What challenges are there regarding the existing processes. Possible points of improvement.	15 March, 2023 1 hour	Field notes
	Data 2, for the building of the proposal (Section 5)				
4	Interviews: Platform owners	Remote interviews	Proposal brainstorming sessions and discussions how the processes could be enhanced	22 March, 2023 1 hour	Field notes
	Data 3, for the Validation of the proposal (Section 6)				
5	Interview 4: Platform owners	Remote interview	Validating the suitability and performance of the initial proposal.	5 April, 2023 1 hour	Field notes

Table 1. Details of the data used in the current state analysis (Data 1), proposal building (Data 2) and validation of the proposal (Data 3)

As seen from the table presented above, the data for this thesis was collected in two different rounds. The first round, (Data 1) was collected during the current state analysis part of the study. This was done to gain the best possible image of the current state of the processes. In addition, this gave a sense of direction allowing for a more targeted approach to specific areas that could need improving.

The second round, (Data 2) of data collection was done while building the initial proposal. During this round of data collection, brainstorming sessions and discussions were had with the platform owners to enable to build the most compelling enhancement proposals which would fulfill and answer to their needs.

The third and last round, (Data 3) of data collection was done in the validation part of the study. This was done so that the proposal presented was thoroughly gone through and that it was available for feedback and discussion. Based on the feedback received from the platform owner’s minor adjustments and enhancements were made to the proposals.

The main source of data collection for this thesis was through conducting interviews. The purpose of these interviews was to gain a more comprehensive understanding of the participants' viewpoints regarding the current state of the processes. By conducting interviews, it was possible to ask follow-up questions and clarify points that were raised during the conversations with the participants.

Data for this study was gathered through one-to-one interviews with various experts employed in different functions within the case company. It was essential to interview individuals from different functions to ensure a comprehensive and diverse understanding of the topic. This approach allowed for a well-rounded image of the current state to be formed, with insights and perspectives from various angles being taken into account.

2.3 Thesis plan

The figure below is the thesis schedule. This thesis is estimated to last ten weeks until it is completed. From the table below can be seen the different durations of the thesis stages.

Week 1	Gate 1 - Thesis introduction (Business context, Challenge, Objective and Outcome)
Week 2	Gate 2 - Method and Material (Research design, Data collection, thesis plan)
Week 3	Gate 3 - Current state analysis (Analysis of the current process integration of the case company)
Week 4	
Week 5	Gate 4 - Conceptual framework (Literature review of ITIL practices related to IT asset management and financial management)
Week 6	
Week 7	Gate 5 - Initial proposal (Building the initial proposal for the case company)
Week 8	
Week 9	Gate 6 – Validation (Validation and further development of the proposal)
Week 10	Gate 7 – Conclusion

Table 2. Thesis schedule

As can be seen from the table above the first phase of the thesis (Week 1) is about introduction to the subject and the business context, challenge objective and outcome. After that (Week 2) the method and material are introduced. The third phase (Weeks 3-4) focuses on the conceptual framework of the study. The fourth phase (Weeks 5-6) is about the current state analysis. The fifth phase (Weeks 7-8) concentrates on the initial proposal. The sixth phase (Week 9) is the validation of the proposal. The last phase (Week 10) of the thesis is the conclusion where the thesis is finalized and summarized.

3 Current state analysis

This chapter covers the current state analysis that was done in this thesis. The CSA focuses on four processes of the case company and their integration with each other. The CSA involves gathering information and knowledge about the current state of the processes and having interviews with the case company's platform owners. Based on the information gathered from these interviews, an analysis of the strengths and weaknesses was formed.

3.1 Overview of the CSA stage

The current state analysis was conducted in two stages. The first stage involved gathering knowledge and observing how the current processes functioned and how they interacted with each other. This stage was essential in order to achieve a comprehensive understanding of the overall picture of how the processes functioned before conducting the interviews.

The second stage of the CSA involved conducting interviews with the case company. These interviews focused on how the different processes are currently functioning, and how process integration could be improved. In addition, the interviews gave the case company's employees an opportunity to share their views and opinions openly on how the current processes are working and how they could be enhanced. This information was very valuable and gave good insight for building the proposal.

3.2 Current processes descriptions

This thesis focuses on developing integration among four specific processes. These processes are maintenance and support contract renewal and management, monthly forecast updates for capital expenditures (CAPEX) and operational expenditures (OPEX), monthly internal cost allocation update, and monthly demand forecast from accounts. The following sections will provide the questions that were asked regarding the processes as well as the background of the question. After this, the explanations of processes and process descriptions are presented.

3.2.1 Maintenance and Support Contract Renewal and Management

The following table introduces the questions that were asked from the platform owners of the case company regarding the maintenance and support contract management. The table also explains the background behind the questions.

Maintenance and Support Contract Renewal and Management		
Interviewees	**Question**	**Background**
Platform owners	How are the renewals handled currently, are you and your team responsible for renewing the contracts?	To understand better how the current process is handled
Platform owners	How are you keeping track of the assets and renewing them, do you have a list where you track them?	To understand better how the current process is handled
Platform owners	Should there be a person that is responsible for handing the renewal process on behalf of you and your team?	To understand better how the current process is handled
Platform owners	Is there unnecessary repetition in the process where you feel that this are done twice?	To get a better understanding about the state of the process
Platform owners	Is there something that could be improved in the process from your opinion?	To get a better understanding of point of improvement
Platform owners	What is the biggest challenge regarding this process?	To get a better understanding of the weaknesses of the process

Table 3 Maintenance and Support Contract Renewal and Management questions

Maintenance and support contract renewal and management is a process in which the case company's support and maintenance renewal contracts are handled. Currently, the platform owners are responsible for renewing and maintaining the different maintenance and support contracts that fall under their supervision. Each platform owner is responsible for overseeing their specific technology. This means that for example the storage platform owner and their team handle storage-related renewals, while the network platform owner and their team take care of network-related renewals. This is done with each technology that the case company has.

The case company has an internal procurement site that it uses to manage the acquisition of IT assets. When it is time to renew a contract, the process begins with a request for sourcing through the procurement site by creating a ticket for it. The procurement back-office team is in charge of managing the sourcing process. This includes handling requests and obtaining quotes from vendors.

Once the quotation is received from the procurement site, it is carefully examined to ensure the item in the offer matches with the request. If necessary, the back-office team handles price negotiations with the vendors. After the item and price of the offer have been verified the process moves on to the next step.

The next step in the process is to request either a capital expenditure or operational expenditure from the manager, depending on the type of asset being purchased. The offer is then evaluated based on the budget allocated for that specific item, and either approved or denied. If the asset purchase is approved from a budgeting standpoint, the process moves on to the final step.

The final step of the process is purchase requisition which involves submitting the requisition through the internal procurement site by creating a ticket for it. After the requisition is submitted, it goes through another approval process where it is carefully reviewed by different parts of the organisation. When the requisition is approved by all relevant parties a purchase order is generated and the process is considered complete.

Below is a figure that consists of a process description of the maintenance and support contract renewal and management.

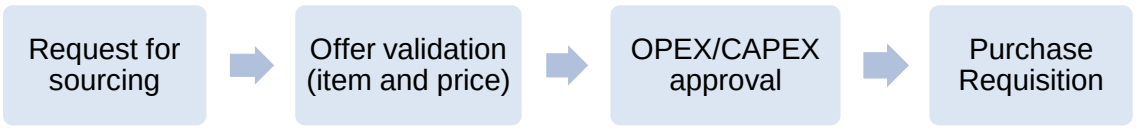

Figure 2 Process steps of maintenance and support contract renewal and management

From the interviews, it became apparent that the acquisition process is time-consuming and diverts valuable attention from the platform owners and their teams. Because the acquisition process takes time and attention away from the platform owners, they have less time to focus on their specialist roles. The platform owners stated that it would be beneficial to have a designated person responsible for assisting them with the procurement process. This would enable them to devote more time to their responsibilities that require their expert attention.

During the interviews, it became apparent that there were different ways that the platform owners were tracking the support and maintenance contracts depending on the contract

provider. Certain platform owners tracked their contracts from the service provider sites where they could access information about each asset, including their expiry date. However, if the asset provider did not offer a tracking system platform owner and their teams would either keep track of the information manually by creating Excel sheets or by setting up notifications to remind them of the assets' expiry dates.

The interviews revealed that the platform owners and their teams believed that there was repetition in the procurement process. The reason for this repetition in the procurement process was that communicating with the vendor often involved multiple rounds of iterations and discussions with the back-office team. As a result, the process is naturally prone to repetition. Additionally, because some of the platform team members were renewing the contracts only occasionally a few times a year the renewing process created confusion at times since the renewal process was not a routine activity for them.

3.2.2 Monthly Forecast Update (CAPEX and OPEX)

The table below outlines the questions that were presented to the platform owners of the case company regarding the monthly forecast update. The table also provides background context for each of the questions.

Monthly Forecast Update (CAPEX and OPEX)		
Interviewees	**Question**	**Background**
Platform owners	How does the monthly forecast update process work in your opinion?	To understand better how the current process is handled
Platform owners	Do you use source reports for updating the monthly Forecast CAPEX & OPEX?	To understand better how the current process is handled
Platform owners	How far are source reports automated? Could the update be handled completely automatically using the source reports?	To find out is there currently automation used and would it be possible to implement automation
Platform owners	Is there unnecessary repetition in the process where you feel that this are done twice?	To get a better understanding about the state of the process
Platform owners	Is there something that could be improved in the process from your opinion?	To get a better understanding of point of improvement
Platform owners	What is the biggest challenge regarding this process?	To get a better understanding of the weaknesses of the process

Table 4 Monthly Forecast Update questions

A monthly forecast update is a process where the case company's forecasted expenditure is being tracked. It contains a financial report that tracks the anticipated expenses for long-term investments and day-to-day business operations throughout the year. This file consists of both capital expenditure (CAPEX) and operational expenditure (OPEX) forecasts.

There are two types of capital expenditures that the case company can make. The first type involves purchasing assets with a full payment, which then makes the company the owner of those assets. The second type of CAPEX involves entering into a financial leasing agreement to acquire assets. In this case, the company does not pay the full amount upfront but commits to paying for the asset on a monthly basis. Even though this may appear to be an OPEX from a cash flow perspective, it is still considered CAPEX because the case company is committed to paying the full price.

All costs that are related to the ongoing operations and systems like maintenance and support contracts are considered operational expenditures. This also includes license contracts where the costs are negotiated to a fixed price and billed based on the volume of use.

The platform owners and their teams update both forecasts throughout the month whenever a contract is renewed, a new contract is made, or a contract is not continued. Moreover, the forecast update also includes updating the actuals regarding assets that are billed based on a monthly usage of the assets. Once a month, the forecasts are thoroughly updated and validated for all technologies included in the forecasts. After the items have been validated the forecasts are submitted to the financial system of the case company.

The figure below presents the process description for the monthly forecast update.

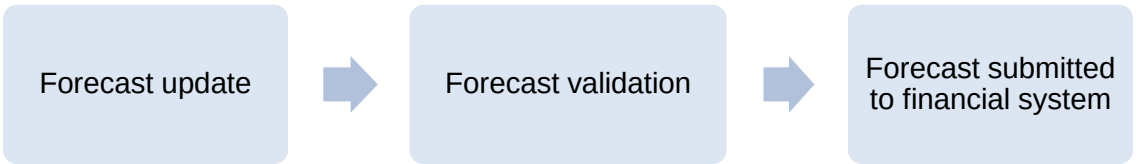

Figure 3 Process steps of monthly forecast update

After conducting the interviews, it became clear that the monthly forecast update process was functioning effectively. The platform owners expressed that this process was the most effective out of the four other processes. They also mentioned that the steps involved in this process were clear and well-understood by everyone.

Even though the process was working efficiently the platform owners expressed that some areas of the process could be improved. The platform owners identified a need to improve the OPEX forecasting process. Currently, the process involves manually updating the actual usage of technologies from various sites. To enhance this process, the platform owners proposed acquiring the actual usage data from a single source and automating the updating of the data, which is currently being done manually.

Another point from the platform owners was on forecasting the future expenditure of assets. With more accurate information regarding future changes to the service use the platform owners could make more accurate estimates of the future expenditure of different technologies.

3.2.3 Monthly internal cost allocation update

The following table introduces the questions that were asked from the platform owners of the case company regarding the monthly internal cost allocation update. The table also explains the background behind the questions.

Monthly Internal cost allocation update		
Interviewees	**Question**	**Background**
Platform owners	How does the monthly internal cost allocation update process work in your opinion?	To understand better how the current process is handled
Platform owners	How often is the end of the year forecast updated?	To understand better how the current process is handled
Platform owners	Do you use source reports for updating the monthly internal cost allocation file?	To understand better how the current process is handled
Platform owners	How far are source reports automated? Could the update be handled completely automatically using the source reports?	To find out is there currently automation used and would it be possible to implement automation
Platform owners	Is there unnecessary repetition in the process where you feel that this are done twice?	To get a better understanding about the state of the process
Platform owners	Is there something that could be improved in the process from your opinion?	To get a better understanding of point of improvement
Platform owners	What is the biggest challenge regarding this process?	To get a better understanding of the weaknesses of the process

Table 5 Monthly internal cost allocation update questions

Monthly internal cost allocation update is a process where the technology usage of the different platforms is tracked and updated. It involves a file that contains the unit costs of various technologies used by the accounts. The file includes the actual usage of each technology up to the last month of the current time, as well as a forecast of the future usage of different technologies. The platform owners update the forecast from their view, and there is also input from the accounts regarding the forecast, which is discussed in the next section *3.2.4 Monthly Demand Forecast from accounts*.

Each month, the platform owners update a file that contains the usage of technology from the previous month. This usage is a combination of both fixed allocations and volume-base unit cost allocations. The volume usage of technologies is acquired from different source reports regarding technology usage. After the source reports are gotten from the different sites, the information is added to the internal cost allocation file. If there are any significant changes to the future use of services that the platform owners can see from the data, they will update the forecast accordingly.

After this, the internal cost allocation file is published to the accounts with the inputs to the future use of services that the platform owners have entered. This step is gone through in the next section *3.2.4 Monthly Demand Forecast from accounts.* After the

input from the accounts has been added the final version of the internal cost allocation file is entered into the financial system that the case company has.

In the figure below is a process description of the monthly internal cost allocation update.

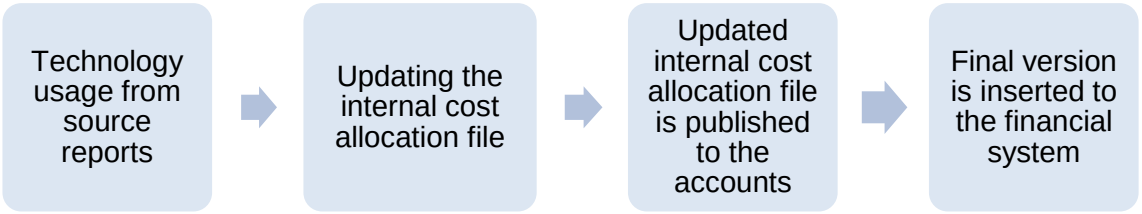

Figure 4 Process steps of Monthly internal cost allocation Update

The platform owners felt that the monthly internal cost allocation update process was functioning adequately. However, some platform owners and their teams were spending a considerable amount of time on this process. The reason for this was that they had to manually input the information they received from the source reports. This was something that they felt that was unnecessary repetition in the process. Moreover, the time used for the manual work was once again away from their specialist expertise in the technology side.

Based on the interviews the platform owners felt that they were not able to forecast the future usage of technologies accurately enough from the data they could see in the internal cost allocation file. They strongly felt that the information regarding the forecast should rely on the feedback gotten from the accounts which is covered in the next section. The reason behind this was that the data on technology usage alone couldn't provide visibility into potential new projects that might be in the pipeline.

3.2.4 Monthly Demand Forecast from accounts

The following table introduces the questions that were asked from the platform owners of the case company regarding the monthly demand forecast from accounts. The table also explains the background behind the questions.

Monthly Demand Forecast from accounts		
Interviewees	**Question**	**Background**
Platform owners	Do you get a reasonable demand forecast regarding the internal cost allocation file that is send to the accounts to be updated.	To understand better how the current process is handled
Platform owners	If you are not getting the information, how have you proceeded in order to get the necessary information from the accounts? Do you ask about the information straight form the service delivery manager or the operations lead of the accounts?	To understand better how the current process is handled
Platform owners	Does this process work systematically?	To understand better how the current process is handled
Platform owners	Is there unnecessary repetition in the process where you feel that this are done twice?	To get a better understanding about the state of the process
Platform owners	Is there something that could be improved in the process from your opinion?	To get a better understanding of point of improvement
Platform owners	What is the biggest challenge regarding this process?	To get a better understanding of the weaknesses of the process

Table 6 Monthly Demand Forecast from accounts questions

The monthly demand forecast from accounts is a process where the different accounts report their forecasts related to their technology usage in the future. The demand forecast from accounts is used to help on forecasting the usage of the IT assets and their development in the coming future.

Once the internal cost allocation file is published, it is forwarded to the service delivery managers and operational leads of the accounts for assessment and comments. During the evaluation process, they are expected to provide feedback if the projections presented in the internal cost allocation file do not reflect the accurate numbers expected to realize in the near future.

Once the accounts have reviewed the file and updated it in line with their perspective it is sent back to platform owners for another round of evaluation. During this evaluation, the platform owners will review the forecasted numbers and provide comments on whether they seem reasonable compared to the data they currently have regarding the accounts. The final review is carried out jointly by the platform owners, service delivery managers, and operational leads. After this stage, the file is updated for the final time.

Below in the figure is a process description of the monthly demand forecast from accounts.

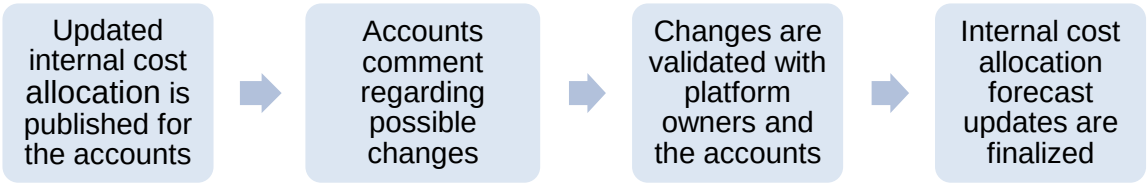

Figure 5 process steps of Monthly Demand Forecast from accounts

This process is crucial since it helps the case company to better predict where the different assets are going to develop. This helps to answer questions like are there going to be new projects with the accounts that require significant investments in the infrastructure of IT assets or are some technologies going to scale down in the future. This helps the case company to make more informed decisions with the management of their IT assets which dictates the financial expenditure significantly.

From the interviews, it was clear that the service delivery managers and operation leads were not providing comments or information back consistently when the information about the internal cost allocation was sent out to them. The required feedback regarding the future forecast was gotten after the platform owners asked the service delivery managers and operation leads personally about the possible changes to the internal cost allocation. This was something that the platform owners felt needed improvement.

3.3 Process integration explained

The four processes integrate with each other in the following way. *The Monthly Demand Forecast from accounts* process in section *3.2.4* provides information that is used to update the forecast in the *Monthly Internal Cost Allocation Update* process in section *3.2.3*. By analysing the projections in the forecast the case company can determine whether certain technologies will need to be scaled up which would require investments in the future. On the other hand, if the forecasts show that certain technologies need to be scaled down, the company can proactively reduce services that will no longer be needed in an efficient manner.

The changes made to the monthly internal cost allocation files in section *3.2.3* have an impact on the *3.2.2 Monthly Forecast Update*. The reason for this is that the OPEX or CAPEX forecast needs to be updated based on the new information that is gotten. For instance, if some services are expected to go down, the assets that are affected need to be assessed and the potential steps for scaling down the services need to be considered. However, if some technologies are expected to grow, the company needs to plan for future investments regarding these assets. It is crucial to have accurate information about the expected growth of technologies, as some assets may take a long time to be delivered to the company and expedite the delivery times for the customer.

The *3.2.1 Maintenance and Support Contract Renewal and Management* process is impacted by three processes. When changes need to be made to the assets that the case company has it is critical to track the assets owned by the accounts to make informed decisions based on them. By effectively tracking the assets the case company can avoid redundant work and save time, which can be utilized for other actions.

This is how all of the processes integrate with one another and why it is important to make sure that each process is working as effectively as it could together. In the next sections of this chapter, the strengths and weaknesses of the current processes are presented.

3.4 Strengths of the current processes

In the interviews, the platform owners stated that the roles and responsibilities for taking care of the four processes were clear. From the clear distribution of responsibilities, the different platform owners were able to function effectively in their own environment. The systematic allocation of tasks and duties among team members also helped to avoid confusion and misunderstandings. As a result, the platform owners were able to work collaboratively leveraging each other's strengths and expertise.

The information possessed by the case company can be regarded reliable and precise as it has undergone a thorough and comprehensive inspection process. The company has made a great effort to ensure that the data it uses is of high quality, which allows them to make informed and effective decisions that positively impact their operations.

3.5 Weaknesses of the current processes

Based on the interviews conducted, it became clear that there were too many people involved in the maintenance and support contract renewal and management process. As too many people are doing the tasks related to the renewal on a part time bases the information is not centralized which results in confusion. In addition, since the technical specialists in platform teams are experts in their technologies, they are not expertized in the financial and procurement aspects of the process.

An issue was that the platform owners and their teams were managing IT assets and tracking information in locations that were not easily accessible to all parties involved. The lack of accessibility to tracking information caused additional workload for the platform owners and their teams as they had to spend time searching and providing the required information to individuals who needed it. Moreover, if the person responsible for contract renewal was absent, the individuals taking over the task had limited visibility on the previous actions taken for the renewal, including information related to procurement tickets.

The forecast update regarding OPEX required a lot of time since the information had to be entered manually. This was due to the fact that the information was acquired from various sites. In addition, the platform owners were not able to forecast the expenditure of assets that were billed based on usage of the customer consistently because they did not have accurate information from the accounts.

Platform owners and their teams used a lot of valuable time in manually entering and changing the data to the correct locations in the internal cost allocation file. This resulted time spend on activities outside of their specialist roles.

During the interviews, it became apparent that the feedback received from them was often inadequate, either being too brief or not being received at all. As a result, the platform owners had to directly ask the accounts if they wanted to receive the information, which consumed a significant amount of their valuable time. When the accounts informed about changes it was often provided right before the upcoming changes. The platform owners felt that the process allowed them to make trend base analysis from the feedback that they got from the accounts. However, from the existing process it is hard to capture feedback regarding bigger changes to technology usage or upcoming projects that the accounts of the case company have.

The platform owners stated that the feedback from the accounts focused on changes which were going to with an absolute certainty realize. However, a view to the possible changes that were in the discussion phase with the accounts was less available to the platform owners and their teams. This was something that they felt would need enhancing since knowing what kind of changes are being discussed would help them to have plans beforehand even though the plans might not realise to actual changes to the service.

3.6 Summary of the key findings from the CSA

After having conversations with the platform owners, it was decided that certain areas would be left out to be updated after the thesis project. Since building an automation to the processes regarding OPEX update from various sites and internal cost allocation file update would require considerable amount of work these were scoped outside of this thesis.

From the discussions that were had with the platform owners three key findings were discovered. The first key finding of the CSA was that information was not shared effectively between the different teams. The lack of clear and holistic monitoring of current maintenance and support contracts is an indication of this. In addition, the task of monitoring and renewing contracts within teams is causing an excessive workload compared to the work capacity of individuals and their teams. From the interviews it was clear that this was something that the platform owners felt needed enhancing.

The second key finding from the CSA was that the platform owners could not accurately forecast the future expenditure of assets that were billed based on the usage by the accounts. The platform owners felt that with more accurate information from the accounts regarding their future projections they would be able to make more accurate assumptions.

The third key finding of the CSA was that the forecasting of the capacity usage was lacking. Since the platform owners can only make limited number of predictions based on the usage data, they are heavily reliant on the feedback that is gotten from the accounts. However, the accounts were not providing information frequently which resulted in situations where platform owners were able to prepare for the upcoming changes in a sufficient manner.

The study focuses on building a proposal for the following three findings that were made during the CSA. Based on the key findings there are also assigned relevant literature from ITIL that will work as the theory for each of the key findings. The table below describes the key findings from the CSA and the relevant literature from ITIL.

Key findings from the CSA	**Relevant literature in ITIL**
Support and maintenance contracts are handled in a way which could be optimized	IT asset management Supplier management
There is a lack of consistent feedback from the accounts regarding the demand forecast	Capacity and performance management Infrastructure and platform management
Case company is unable to forecast OPEX numbers consistently due to the lack of feedback from the accounts	Service financial management

Table 7 Key finding and relevant theory

From the table above can be seen the three key findings and the assigned relevant literature. In the next chapter the available knowledge on ITIL processes is presented.

4 Available knowledge on ITIL processes

This chapter covers the available knowledge on ITIL processes. The available knowledge focuses on ITIL and its practices surrounding IT asset management, capacity management and financial processes. The following literature was chosen to give a better understanding of IT processes and their integration with each other.

4.1 ITIL and its development

Information Technology Infrastructure Library or (ITIL), is a widely used framework of best practices for managing IT services. In order to help companies manage their IT services consistently and effectively, ITIL offers a set of comprehensive processes and procedures for it.

The ITIL framework has evolved over time to keep up with the evolving IT environment. The history of ITIL dates back to the 1980s, when the British government's Central Computer and Telecommunications Agency (CCTA) developed a set of guidelines for IT service management and the first version of ITIL was born. The first version of ITIL provided guidance on various aspects of IT service management. (IBM)

ITIL has undergone a number of updates throughout time. The second version of ITIL was launched around the year 2000. New guidelines on a variety of IT service management topics were also included in the revised version. ITIL was once again updated in 2007 when the third version of ITIL was presented. This version of ITIL consisted of five phases which were service strategy, service transition service design, service operation, and continual service improvement. (IBM)

The latest version of ITIL is ITIL 4 which was launched in 2019. ITIL 4 builds on the success of the previous versions of ITIL. This version incorporates new approaches, tools, and best practices to align IT services with the needs of the modern digital world. One of the most significant changes that were made to ITIL 4 is its shift towards a more holistic approach to IT service management. (Axelos 2019: 8, IBM)

4.2 ITIL management practices

One of the key components of ITIL is its management practices, which provide a structured and consistent approach to managing IT services. There are three main components in management practices. The following components are general management practices, service management practices and technical management practices.

4.3 General management practices

In the following chapter, the focus will be on the service financial management and supplier management domains of general management practices. These will provide a good understanding about the financial aspect of service management as well as the importance of effective supplier management.

4.3.1 Service financial management

Service Financial Management is an essential domain in the general management practices of ITIL that focuses on the financial aspects of IT services. It helps to assure that IT services are delivered cost-effectively and that the value of IT services is clearly understood by the organization. The goal of service financial management is to provide transparency and visibility into the costs of IT services, enabling organizations to make informed decisions based on them. (Axelos 2019: 135-139)

According to ITIL, to have a better overview of service financial management it is important for organizations to establish a good understanding of organizations budgeting/costing, accounting and charging. Service financial management includes policies, processes, and procedures that enable the organizations to manage their IT finances effectively. (Axelos 2019: 135-139)

Budgeting is an essential activity of service financial management in ITIL. It involves setting financial targets, allocating resources, and monitoring actual expenditures against a forecasted budget. By establishing a budget for IT services organizations can ensure that IT investments are made in a planned and controlled manner. (Axelos 2019: 135-139)

With the constant evolution of the IT environment and the introduction of new technologies, organizations have had to adapt and transform their approach on managing IT services, particularly from a budgeting standpoint. In the past, organizations would typically acquire IT resources through upfront capital expenditure (CAPEX). However, since the development of cloud computing, software, platforms, and IT infrastructure are increasingly offered "as a service". This has shifted the expenditure standpoint from capital expenditure towards operational expenditure (OPEX). (Axelos 2019: 136-139, Panasonic Connect)

As mentioned, OPEX is the preferred expenditure type for cloud services as they are often consumed as utilities and paid out of the operational budget. According to ITIL, to avoid unexpected OPEX, organizations should improve their OPEX forecasting and implement service financial management practices to their financial management to get the best possible results. (Axelos 2019: 218)

Accounting is another activity of service financial management that involves identifying the costs of IT services and managing them in line with the organization’s objectives. This activity ensures that the services are delivered cost-effectively and according to the plan. Accounting enables comparison between forecasts and actual expenditure of IT assets. By keeping track of the cost associated with IT spending organizations can make more informed decisions regarding their IT expenditure. (Axelos 2019: 136-139)

Charging is an activity in service financial management where service providers invoice their customers for the services that they have provided for them. For IT services to be produced for customers, they need to be funded with an agreed method and the costs of providing the services to be allocated correctly. This is the main idea of charging. (Axelos 2019: 136-139)

In summary, service financial management provides transparency and visibility into the costs of IT services. This enables organizations to make informed decisions and prioritize their investments and spending effectively. In addition, by establishing a framework for finances that aligns with the organization's overall business objectives, service financial management can help to optimize IT spending so that organizations can deliver IT services cost-effectively. (Axelos 2019: 136-139)

4.3.2 Supplier management

Supplier Management is an important domain of general management practices which focuses on managing the relationships with external suppliers who provide goods or services to IT organizations. This domain enables organizations to manage their suppliers effectively, ensure that they deliver value to the organizations, and minimize the risks associated with supplier relationships. (Axelos 2019: 142-146)

Supplier strategy or also called sourcing strategy is an important part of the supplier management domain. It outlines a structured and consistent strategy for supplier management that is in line with the organisation's overall business objectives. Having a supplier strategy is highly beneficial for organizations that are dealing with multiple different vendors. Moreover, it is especially important to establish and maintain a good relationship with suppliers through the supplier lifecycle. (Axelos 2019: 142-146)

When selecting suppliers for organizations it is important to focus on several aspects. Potential suppliers should be evaluated based on their experience and track record. It is also important to evaluate the suppliers' capabilities and their ability to meet the organization's needs. In addition, the evaluation process includes assessing the value that is provided by estimating the risks associated with the suppliers and the cost aspect of the service or product provided. (Axelos 2019: 142-146)

There are also activities involved with supplier management. According to ITIL, it’s important to track and evaluate the suppliers and contracts for new or changed business needs. This is done to ensure that suppliers are delivering value and meeting their contractual obligations. If there are new or changed business needs organizations can adopt supplier planning activity where plans are developed to adapt to these changes. (Axelos 2019: 142-146)

Service integration is also another aspect of supplier management. Service integration oversees organizing and managing all vendors engaged in providing goods and services to the organisations. An organisation can deal with this by acting as its own service integrator, employing a third-party service integrator, or using a hybrid model. (Axelos 2019: 142-146)

In conclusion, supplier management is an important part of any organisation which enables them to manage their supplier relationships effectively. It helps organisations identify, evaluate, select, and manage suppliers throughout the supplier lifecycle. By establishing a structured and consistent approach to supplier management, organizations can improve their supplier relationships and reduce supplier-related risks. (Axelos 2019: 142-146)

4.4 Service management practices

In the following chapter, the focus will be on the IT asset management and capacity and performance domains of service management practices. These will provide a comprehensive understanding of managing IT assets, as well as effectively managing the performance and capacity of an organisation's IT systems.

4.4.1 IT asset management

According to ITIL terminology, the definition of an IT asset is the following: “Any financially valuable component that can contribute to the delivery of an IT product or service.” (Axelos 2019: 167)

ITAM is a crucial domain of service management practices that encompasses a diverse range of components including software, hardware, networking, cloud services, and client devices. This domain involves the systematic tracking and management of IT assets from acquisition to disposal to ensure that they are efficiently utilized, and the maximum value is received. (Axelos 2019: 167-170)

The idea of ITAM is to provide a clear understanding of an organization's IT assets. This information is used to optimize the use of IT assets from both cost and value perspectives. The cost of IT assets can be substantial, especially for large organizations with complex IT environments. The tracking of IT assets is very important particularly for cloud services since their costs can run to high amounts if they are not managed properly. ITAM helps organizations to keep track of their IT assets and associated costs enabling them to optimize their spending and avoid unnecessary expenses. Therefore, it is important to maintain up-to-date information about the status, location, and ownership of IT assets.

ITIL states that the responsibility of ITAM may either lie with a centralized team or with individual technical teams depending on the organizational context and culture. If the management of assets is handled by centralized teams, they can also be responsible for configuration management. However, if the management of assets is under technical teams it means that the different technical teams are responsible for the assets that the organization has. (Axelos 2019: 167-170)

IT asset lifecycle management is one of the core activities of ITAM. While there may be variations in how different organizations define the IT asset lifecycle management stages the majority tend to follow steps that resemble the model that is presented in the figure below. (Axelos 2019: 167-170, Blancco)

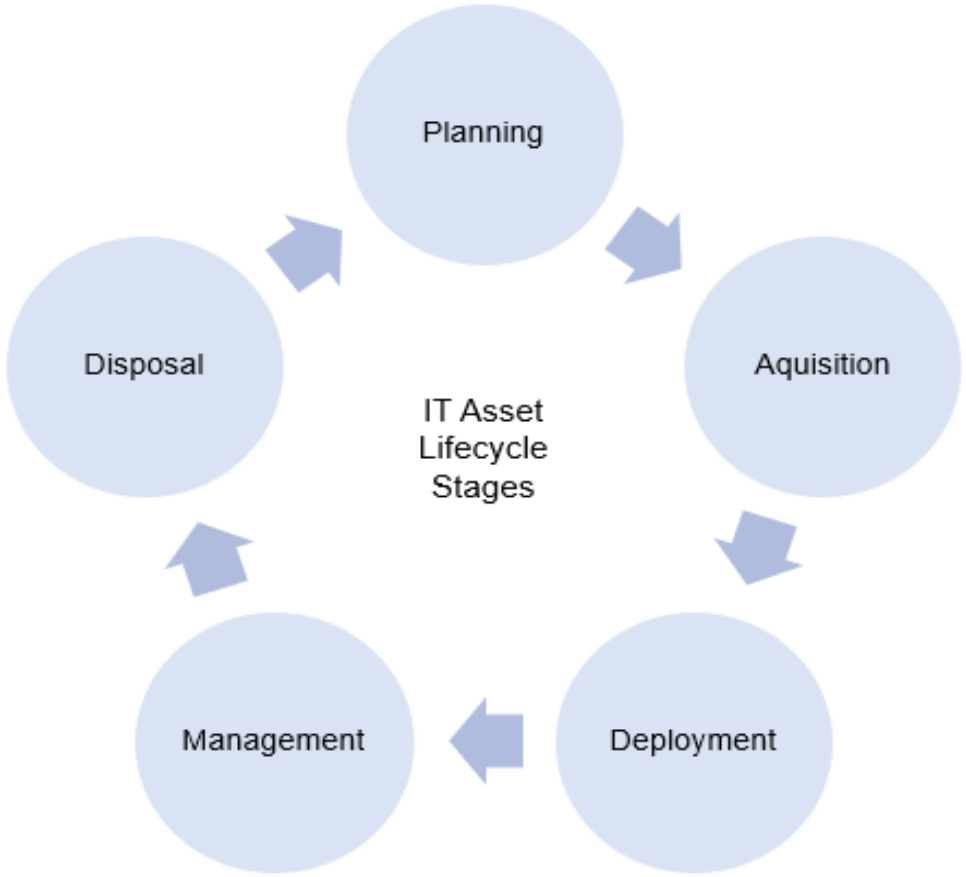

Figure 6. IT asset lifecycle stages

From the figure above can be seen that the first stage of IT asset lifecycle is planning. During this stage, organizations identify their IT needs and determine which assets will best meet them. In this process, the organization's current IT infrastructure is evaluated

to find any gaps or areas that require improvement. Planning also involves developing a budget for acquiring and maintaining IT assets and calculating the return on investment (ROI). (Blancco)

The second stage is about the acquisition. During this stage, organizations procure the necessary hardware, software, and other IT assets. This stage includes selecting the best provider, negotiating with vendors, getting approval from the budget, and purchasing the assets. (Blancco)

The third stage is deployment. This involves configuring and installing the IT assets in the organization's infrastructure. This part also involves ensuring that they are integrated with other systems and applications. In addition, during this process the owner of the assets should be determined. The fourth stage is management. This stage involves monitoring the IT assets to ensure they are running efficiently. This also consists of conducting regular maintenance and applying updates and patches to keep them up-to-date and secure. (Blancco)

The final stage of the IT asset management lifecycle is disposal. This stage is for the physical asset that the organization has. When the servers, drivers or computers are at the end of their useful life they must be disposed. This should be done in an environmentally friendly and secure manner. (Blancco)

In summary, IT asset management is a critical domain of service management practices that enable organizations to manage their IT assets effectively. It involves the identification, tracking, and management of IT assets throughout their lifecycle. Organizations may optimize their spending and increase the return on their IT investments by properly managing their IT assets.

4.4.2 Capacity and performance management

According to ITIL terminology, the definition of performance is the following: “A measure of what is achieved or delivered by a system, person, team, practice, or service.” (Axelos 2019: 157)

Capacity and performance management is an important domain of service management practices that focuses on managing the performance and capacity of an organization's IT systems. The purpose of capacity and performance management is to make sure that IT systems can meet current and future demands in a cost-efficient manner. (Axelos 2019: 157-159)

Capacity and performance management practice consist of two main activities. The first main activity is service performance and capacity analysis which includes two activities. The first activity of service performance and capacity analysis is research and monitoring of the current service performance. This activity involves analysing the performance and capacity of IT services to identify areas of improvement to ensure that services are meeting business requirements. Another activity of service and capacity analysis is capacity and performance modelling. Capacity and performance modelling can help to plan for future capacity needs. This helps to ensure that IT services are always available for the customers when needed. (Axelos 2019: 157-159)

The second main activity of capacity and performance management practice is service performance and capacity planning which includes three parts. The first part is analysing capacity requirements. The second part is forecasting demand and resource planning. This is done to ensure that IT systems have the capacity to meet current and future demand. The third part is performance improvement planning which focuses on optimizing the performance of these systems to meet the needs of end-users. (Axelos 2019: 157-159)

In conclusion, capacity and performance management is an important domain of service management practices which enables organizations to optimize the performance and capacity of their IT systems. It involves understanding the capacity and performance requirements of IT systems, monitoring and managing system performance, identifying and addressing performance and capacity-related issues, and planning for future capacity requirements.

4.5 Technical management practices

In the following chapter, the focus will be on the infrastructure and platform management domain of technical management practices. This will give an understanding of managing the infrastructure and platforms of IT organizations. This part also covers the various cloud service models and cloud service deployment models.

4.5.1 Infrastructure and platform management

Infrastructure and platform management is an important domain of technical management practices. It focuses on managing the underlying infrastructure and platforms that support an organization's IT systems. Infrastructure and platform management's goal is to make sure that the IT infrastructure and platforms are reliable, secure, and can meet the needs of end-users. (Axelos 2019: 215-219)

Infrastructure and platform management involves managing the physical and virtual infrastructure that supports an organization's IT systems. This includes managing servers, storage, networks, and other hardware components. Making sure that the infrastructure is operating effectively and that the needs of the organization's customers are met is part of effective infrastructure management. Monitoring and maintaining the infrastructure, recognizing and resolving problems, and planning for future infrastructure needs are all part of the infrastructure management process. (Axelos 2019: 215-219)

The various way by which cloud computing services are made available to customers are referred to as cloud service models. There are three main cloud service models. These are Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). IaaS provides users with access to virtualized computing resources, such as servers, storage, and networking without them having to take care of the underlying infrastructure. PaaS provides users with a platform on which they can develop, run, and manage their applications without having to manage the underlying infrastructure. SaaS provides users with access to applications that are hosted on the cloud infrastructure without them having to take care of the supporting infrastructure. (Axelos 2019: 215-219)

Cloud service deployment models refer to different ways in which cloud computing services can be deployed and made available to users. There are four primary cloud service deployment models. These are private cloud, public cloud, community cloud and hybrid cloud. (Axelos 2019: 215-219)

A private cloud is where cloud resources and services are managed by an organization on their own premises or on external premises, while still keeping ownership of the resources. The resources are reserved solely for specific individual customers and can only be accessed by them. Public cloud resources are managed by the cloud provider. The resources and services are used by multiple customers which they can scale up or down based on their needs. (Axelos 2019: 215-219)

A community cloud is where cloud resources are managed by one or more stakeholders inside a community. The recourses and services are shared with the community that are in a relationship with one another. A hybrid cloud is where cloud recourses and services are maintained in a private, community, or public cloud. The services are divided between these and used according to their needs. (Axelos 2019: 215-219)

In conclusion, infrastructure and platform management is an important domain of technical management practices. It enables organizations to manage the underlying infrastructure and platforms that support their IT systems. It involves managing the physical and virtual infrastructure and the software platforms that support the IT systems ensuring that they are reliable and secure.

4.6 Conceptual framework

The available knowledge and best practices were used in the conceptual framework. The conceptual framework also has the key finding from the CSA. The conceptual framework shows how the literature is going to be used in the building of the initial proposal. The conceptual framework is presented in the table below.

Key findings from the CSA	Related ITIL literature	Use of the literature
Support and maintenance contracts are handled in a way which could be optimized	4.4.1 IT asset management 4.3.2 Supplier management	To understand how to efficiently manage IT assets and suppliers that an IT organization has
There is a lack of consistent feedback from the accounts regarding the demand forecast	4.4.2 Capacity and performance management 4.5.1 Infrastructure and platform management	To understand how to effectively manage capacity and performance, as well as infrastructure and platforms
Case company is unable to forecast OPEX numbers consistently due to the lack of feedback from the accounts	4.3.1 Service financial management	To find out what are the best ways to manage IT assets from a financial standpoint

Table 8 Conceptual framework

As seen in the table above the literature on IT asset management and supplier management was researched to get a better understanding of how to efficiently manage IT assets and suppliers that an IT organization has. Then literature on capacity performance management as well as infrastructure and platform management were explored to get a deeper knowledge of how to effectively manage the capacity and infrastructure of an IT organization. Lastly, service financial management literature was explored to find out the best ways to manage IT assets from a financial standpoint.

After the relevant literature has been presented the initial proposal can be built by using the results from the CSA and the available knowledge as a reference point for the proposal.

5 Initial proposal

This chapter covers the initial proposal that was presented to the case company. The proposal was built upon the data collected in the current state analysis, gathered knowledge from the literature review and insights gotten from encounters with the case company. The proposals were formed in collaboration with the case company's employees. This chapter includes an overview of the proposal building stage, the proposals, and a summary of the proposals.

5.1 Overview of proposal building

The study began with doing a current state analysis of the four processes of the case company and their integration with each other. Based on the CSA, relevant literature areas were discovered. From the literature review and CSA, a proposal for enhancing process integration was formed. The proposals were also built based on the insight that was discovered while working with the case company.

The proposals were built through a collaborative effort with the employees of the case company. During discussions with the case company, they provided valuable insights and perspectives regarding how the key findings from the CSA could be improved. Based on these discussions, proposals were formed to address the identified enhancement areas.

Below is a figure of the logic that the proposal was based on.

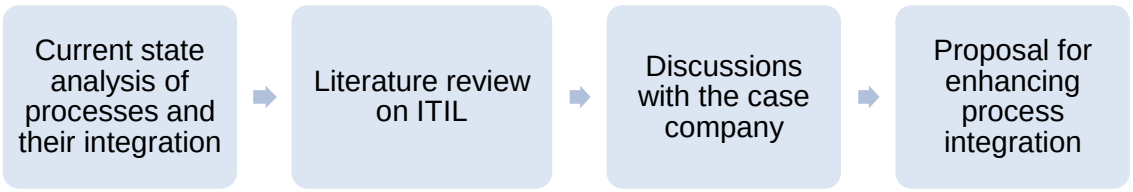

Figure 7. Proposal building logic

5.2 Proposition for enhancing the management of ongoing contracts

One of the key findings from Section *3. Current state analysis* was that the support and maintenance contracts were not managed in a centralized way. The platform owners and their teams tracked the support and maintenance contracts differently and in various locations. As a result of this, when someone who was not managing the contract attempted to find information such as the contract expiration date, the price negotiated in the last contract, and the attributes entered in the procurement site in the previous renewal, they had to do spend considerable time to find this information.

As mentioned in the current state analysis section 3.2.1 *Maintenance and Support Contract Renewal and Management,* the procurement process also takes valuable time from the platform owners and their teams, since the process requires time and attention. Furthermore, as too many people are handling the contracts on occasional bases, it became clear that it is not the most efficient way to manage them.

5.2.1 Best practice from the literature review

In section *4.4.1 IT asset management* it was stated that the idea of ITAM is to provide a clear understanding of an organization's IT assets. The section explained that the information on organisations IT assets is used to optimize the use of IT assets from both cost and value perspectives. Furthermore, in section *4.4.1 IT asset management* it was also stated that proper ITAM helps organizations keep track of their IT assets and associated costs enabling them to optimize their spending and avoid unnecessary expenses. It was also stated that it is important to maintain up-to-date information about the status, location, and ownership of IT assets.

5.2.2 Assigning a person to help in the procurement process

A preference from the platform owners was that there would be a person helping them and their teams in the procurement of the contracts. Even though it is important that the technical teams understand the financial and cost-effective perspective of managing the support and maintenance contracts, from the current state analysis it became evident that there are too many people involved in handling them. The reason for assigning a person to help the platform owners and their teams is that it leaves more time for them to focus on their expert tasks. In addition, this also clarifies the defined roles since the

platform owners' and their teams don't need to focus on the financial and procurement side of the contracts.

The scope of the designated person's responsibilities was established through collaboration with the platform owners and their teams. The assigned individual will concentrate on renewing support and maintenance contracts on behalf of the platform owners and their teams. This person would manage the renewal process from the request for sourcing to the acquisition of the asset. It was agreed with the case company that even though the assigned person would handle the procurement process, the owner of the technology is ultimately responsible for the renewal.

Below is an updated process description of section *3.2.1 Maintenance and Support Contract Renewal and Management* process.

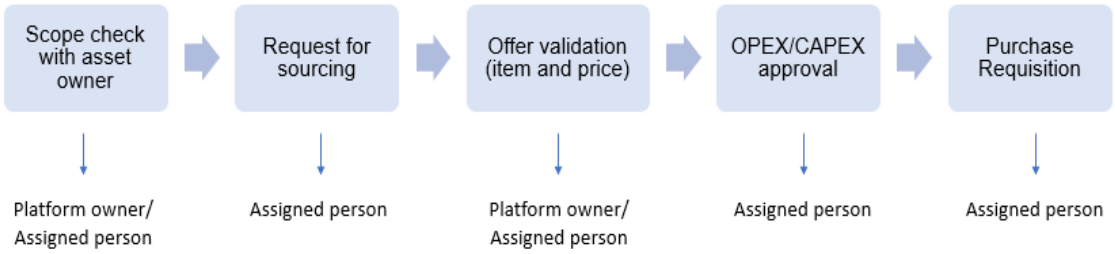

Figure 8. Updated process description of Maintenance and Support Contract Renewal Management process

Before initiating the procurement process, the assigned person will reach out to the owner of the contract. The objective of this communication is to confirm whether the scope of the contract has undergone any changes since the last renewal. If there is no need for modifications to the renewal, the procurement process will proceed with the information that the owner of the contract provides. The assigned person will proceed with the process in a way that was previously described in the CSA. However, during the offer validation part of the process the assigned person will go over the offer provided by the vendor with the platform owner. After the last two steps of the process are finished the assigned person will contact the platform owner that the process is completed and provide the required documents gotten from the vendor to the owner of the contract.

5.2.3 Developing an Excel sheet for tracking the ongoing contracts

After discussing with the case company's teams, a conclusion was made that an Excel sheet would be created to assist the assigned person in acquiring the assets and to provide clarity to the management of support and maintenance contracts. The information in the created Excel sheet was acquired from the platform owners and their teams. The reason for creating the Excel sheet with all the current contracts was that it makes the handling of the procurement process clearer when all the necessary information regarding the contracts is visible in a single location.

The figure below presents the first part of the created Excel sheet. As this information is confidential and intended solely for employees of the company, all figures and dates within the Excel sheet have been replaced with random data.

SC_ID	Platform	Project Code	Technology / Account Name	Vendor	Description	Contract Start Date	Contract Expiration Date
SC001	Platform 1	Project code 1	Technology / The account name	Vendor 1	Descrition of the asset	27.12.2022	27.12.2023
SC002	Platform 2	Project code 2	Technology / The account name	Vendor 2	Descrition of the asset	18.4.2022	18.4.2023
SC003	Platform 3	Project code 3	Technology / The account name	Vendor 1	Descrition of the asset	13.6.2022	13.6.2023
SC004	Platform 4	Project code 2	Technology / The account name	Vendor 3	Descrition of the asset	25.12.2022	25.12.2023
SC005	Platform 5	Project code 5	Technology / The account name	Vendor 2	Descrition of the asset	24.11.2022	24.11.2023
SC006	Platform 6	Project code 2	Technology / The account name	Vendor 3	Descrition of the asset	14.5.2022	14.5.2023
SC007	Platform 1	Project code 7	Technology / The account name	Vendor 1	Descrition of the asset	28.5.2022	28.5.2023
SC008	Platform 6	Project code 8	Technology / The account name	Vendor 2	Descrition of the asset	26.10.2022	26.10.2023
SC009	Platform 5	Project code 5	Technology / The account name	Vendor 4	Descrition of the asset	14.9.2022	14.9.2023
SC010	Platform 2	Project code 1	Technology / The account name	Vendor 1	Descrition of the asset	16.7.2022	16.7.2023
SC011	Platform 5	Project code 7	Technology / The account name	Vendor 5	Descrition of the asset	5.5.2022	5.5.2023
SC012	Platform 3	Project code 7	Technology / The account name	Vendor 1	Descrition of the asset	16.12.2022	16.12.2023
SC013	Platform 5	Project code 2	Technology / The account name	Vendor 3	Descrition of the asset	27.8.2022	27.8.2023
SC014	Platform 6	Project code 7	Technology / The account name	Vendor 1	Descrition of the asset	11.6.2022	11.6.2023
SC015	Platform 5	Project code 5	Technology / The account name	Vendor 1	Descrition of the asset	6.6.2022	6.6.2023
SC016	Platform 2	Project code 2	Technology / The account name	Vendor 3	Descrition of the asset	8.10.2022	8.10.2023
SC017	Platform 5	Project code 3	Technology / The account name	Vendor 1	Descrition of the asset	8.2.2022	8.2.2023
SC018	Platform 1	Project code 5	Technology / The account name	Vendor 4	Descrition of the asset	14.2.2022	14.2.2023
SC019	Platform 3	Project code 5	Technology / The account name	Vendor 6	Descrition of the asset	18.6.2022	18.6.2023
SC020	Platform 5	Project code 7	Technology / The account name	Vendor 2	Descrition of the asset	7.9.2022	7.9.2023

Figure 9. Support and maintenance management Excel 1

The first column of the Excel sheet contains an identifier known as the SC_ID, which is assigned to each of the current contracts. The identifier is given to help to track the contracts. Moreover, from the ID of the contract, there is a link that goes to a SharePoint folder that is designated for each of the contracts. Within this folder, there is information related to the contract's renewal. The folder includes the following information. The procurement tickets that were previously made regarding renewals which are entered

into the procurement site, the previous offer that was received from the vendor and the purchase order created by procurement. The following information provides all the necessary details to handle the procurement process.

The columns from platform to description consist of information about the contract. The platform column has information regarding which platform the contract falls under. The project code column is the specific code that is used for the renewal. Technology / account name column provides information on the technology that the contract is under and the account that the contract concerns. The vendor column provides information regarding who the vendor for that contract is.

Description of the asset has a short description of what the contract is regarding. In the last two columns, there is information on the dates of the contract that is used to track the asset. This information is very valuable to be able to track when the contract is going to expire since the procurement process should be started well in advance of the expiration date.

The following figure is the second part of the support and maintenance management Excel.

Price in Vendor Quotation	Price in Previous Renewal	Price Change	Price Change %	PO Number	Status Update / Additional Details	Owner / MS	Owner / Procurement	Procurement Status	Approval Status
16 221,00 €	15 221,00 €	1 000,00 €	6,57	13422790	Status or additional details	J. Piipponen	J. Luukkonen		
4 354,00 €	3 354,00 €	1 000,00 €	29,82	10385616	Status or additional details	R. Peltonen	J. Luukkonen		
36 523,00 €	35 523,00 €	1 000,00 €	2,82	14134000	Status or additional details	J. Linden	J. Luukkonen		
37 642,00 €	36 642,00 €	1 000,00 €	2,73	12901367	Status or additional details	T. Tuomola	J. Luukkonen		
24 875,00 €	23 875,00 €	1 000,00 €	4,19	14179264	Status or additional details	R. Peltonen	J. Luukkonen		
35 221,00 €	34 221,00 €	1 000,00 €	2,92	13051993	Status or additional details	J. Piipponen	J. Luukkonen		
15 699,00 €	14 699,00 €	1 000,00 €	6,80	10752694	Status or additional details	P. Korhonen	J. Luukkonen		
26 032,00 €	25 032,00 €	1 000,00 €	3,99	10085995	Status or additional details	R. Peltonen	J. Luukkonen		
15 254,00 €	14 254,00 €	1 000,00 €	7,02	13157874	Status or additional details	J. Piipponen	J. Luukkonen		
30 599,00 €	29 599,00 €	1 000,00 €	3,38	13014105	Status or additional details	R. Peltonen	J. Luukkonen		
2 317,00 €	1 317,00 €	1 000,00 €	75,93	11845136	Status or additional details	J. Linden	J. Luukkonen		
19 339,00 €	18 339,00 €	1 000,00 €	5,45	12779992	Status or additional details	J. Piipponen	J. Luukkonen		
17 114,00 €	16 114,00 €	1 000,00 €	6,21	12434331	Status or additional details	J. Linden	J. Luukkonen		
21 150,00 €	20 150,00 €	1 000,00 €	4,96	13949171	Status or additional details	J. Piipponen	J. Luukkonen		
6 794,00 €	5 794,00 €	1 000,00 €	17,26	10514652	Status or additional details	R. Peltonen	J. Luukkonen		
25 119,00 €	24 119,00 €	1 000,00 €	4,15	10747359	Status or additional details	J. Linden	J. Luukkonen		
23 661,00 €	22 661,00 €	1 000,00 €	4,41	12728987	Status or additional details	R. Peltonen	J. Luukkonen		
13 504,00 €	12 504,00 €	1 000,00 €	8,00	12273575	Status or additional details	R. Peltonen	J. Luukkonen		
2 579,00 €	1 579,00 €	1 000,00 €	63,33	13353643	Status or additional details	R. Peltonen	J. Luukkonen		
36 756,00 €	35 756,00 €	1 000,00 €	2,80	11247500	Status or additional details	P. Korhonen	J. Luukkonen		

Figure 10. Support and maintenance management Excel 2

The price in the vendor quotation column indicates the price that the contract is currently negotiated in. Price in the previous renewal is the price that the contract had prior to the existing one. The price change column shows the amount of how much the price has changed between the current and the previous offer. Price change percentage gives the percentage change from the current contract price to the previous contracts.

Creating a column that tracks the expenditure change regarding previous contracts was acknowledged to be highly valuable. The reason for this is that in the formation of next year's budget the percentage change provided can be utilized to predict how prices will develop when the contracts are renewed. Furthermore, the information can also be beneficial for other parts of the organization who for example need to know what asset-specific account has and what is the cost of the current assets.

The PO number column tells the purchase order number that the contract was created under. The status update / additional details column is used to indicate if there is some information that needs to be considered when next time contract is renewed. The owner column indicates who is the owner of that specific technology contract. The owner of the contract is responsible for the technical details of the renewal.

Owner / procurement column indicates the person who is responsible for the ownership of the procurement. This column is added to show who was previously handling the procurement if there are any questions related to how the process was done previously. The procurement status column indicates where in the procurement process the contract is currently in. This information is beneficial to the technology owners in a situation where they want to know the status of the procurement process. Lastly, the approval status column was added to show who is the next approval of the asset when the process has proceeded to purchase requisition stage.

5.3 Proposition for enhancing the capacity forecasting

Another key finding from the *3. Current state analysis* was the limited feedback from the accounts regarding their future capacity forecast. The platform owners and their teams did not have up-to-date information regarding the accounts since there was a lack of consistent feedback on the development of capacity usage regarding the accounts. As a consequence of not receiving feedback consistently on the capacity usage changes, the platform owners sometimes had to make decisions in a brief amount of time. In

addition, the platform owners had to spend their valuable time contacting the accounts directly and engaging in one-on-one conversations to gather the necessary information.

From analysing the current process and having conversations with the case company it became apparent that the current process was effective in predicting the trends that the technologies would follow. However, upon further discussion with the different platform owners, it became evident that the current process was inadequate for predicting larger changes in the technology usage such as new projects being launched by the accounts. Since the service delivery managers and operational leads were not providing insight into potential changes that were being discussed with the accounts, the platform owners were not having a full view of the possible big changes that were in discussions with the accounts.

5.3.1 Best practice from literature review

In section *4.4.2 Capacity and performance management* it was stated that it is important to analyse current capacity requirements. In the literature, it was also stated that capacity forecasting is an important activity to ensure that IT systems have the capacity to meet current and future demands. This is done to ensure that there is a plan in place for IT systems to scale up if business requirements change or to scale down to reduce excess spending by cutting costs related to unused assets.

5.3.2 Demand forecast meeting with the accounts

Because the accounts were not providing information back consistently, the platform owners felt that the situation required improvement. After discussing the matter with the case company's platform owners, it was suggested to involve the accounts more to obtain consistent information about the demand forecast. As a result, recurring demand forecast meeting with the accounts was created to enable more proactive engagement.

Before meeting with the accounts, a demand forecast template was created in the case company’s SharePoint. The template was created to contain all the key figures for providing information about the future usage of capacity. This template differs from internal cost allocation as it focuses on providing the most essential indicators related to capacity usage rather than providing detailed information on technologies.

The SharePoint template has information on the following things: Are there going to be new projects in the upcoming future, when are the new projects expected to start, what is the possibility that these projects will realize in the given time, what applications are affected by the upcoming projects and the key figures related to that. The template also includes information about whether certain technologies are expected to decrease in usage in the future and provides specific details about those predictions. Because the information regarding the capacity usage forecast in the template is company confidential, the specific details related to it will not be shared in this thesis.

By having meetings with the accounts and acquiring information related to future capacity usage and upcoming projects, the platform owners and their teams are able to establish plans for possible changes based on the information provided. In addition, this helps the case company to answer customer's needs in a more efficient manner.

The template is provided to the accounts so that they can fill in the information about their accounts before the first meeting. During the first meeting, the provided information is reviewed and validated. When the demand forecast meetings are being held, a dedicated person will update the template according to discussions had with the accounts. The accounts can also update the template when new changes appear. However, the idea of the meeting is to validate the data and have a discussion on the changes and their impact on technologies between the platform owners and the account teams.

After the first meeting has taken place with the accounts and all the necessary information about their accounts has been entered into the template, regular demand meetings will be scheduled to provide updates on the demand forecast. The reason for having regular meetings with the accounts regarding their demand forecast is that the details related to the forecasted changes can be updated and discussed between the accounts and platform owners. This also helps to make more accurate decisions based on the numbers in the forecast. Furthermore, by keeping the template simple and the meetings straightforward, it can be ensured that the accounts are providing the information consistently since it doesn't require them to enter large amounts of data points.

After having discussions with the platform owners, a meeting frequency of two times per quarter was decided. The reason for having a demand forecast meeting twice a quarter was selected to ensure that the information in the forecast remains up to date. Meeting two times per quarter strikes a balance as it's not so frequent that the demand forecast becomes meaningless but it's also not so infrequent that it doesn't capture the latest information regarding changes to the accounts.

5.3.3 Updating the internal cost allocation file using the demand forecast template

The information which is received from the accounts to the template is used to update the internal cost allocation files forecast regarding accounts. This is done by calculating a weighted average of the changes reported in the SharePoint template and entering calculations prediction to the forecast. Below is a figure of the formula for how the weighted averages are calculated from the data.

Formula

$$W = \frac{\sum_{i=1}^{n} w_i X_i}{\sum_{i=1}^{n} w_i}$$

W = weighted average
n = number of terms to be averaged
w_i = weights applied to x values
X_i = data values to be averaged

Figure 11. Weighted average formula

An example of a calculation related to the accounts is the following. If the projects that have been reported by the accounts are successful it would require an implementation of X number of new virtual machines. However, if there is a reduction in capacity usage to certain parts of the service, that amount would be subtracted from the number of new virtual machines required. This would result in a final number of new virtual machines. To account for any potential changes, a probability factor is included. The probability of projects realizing is defined by the accounts. Once all the factors are considered, a

weighted average is calculated to arrive at the final number. This number is then applied to the internal cost allocation file, resulting in the best estimate of future capacity usage.

Below is updated process description of the monthly demand forecast from accounts.

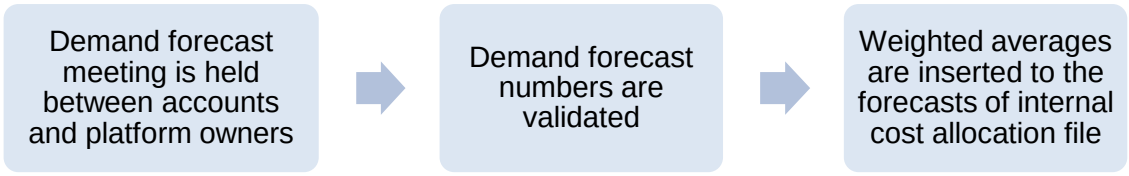

Figure 12. Updated process description of monthly demand forecast from accounts

5.4 Proposition for enhancing the monthly OPEX forecast update

The third and final key finding of the *3. Current state analysis* was that the platform owners were not able to accurately predict the costs associated with the assets that were being charged based on usage by the accounts. This led to OPEX forecasts that were not as accurate as they could have been. The platform owners pointed out that, having more accurate information from the accounts on how their usage of technologies will evolve would allow for more precise forecasting of asset expenditure.

5.4.1 Best practice from the literature

Based on the literature review on ITIL in section *4.3.1 Service financial management*, forecasting of OPEX plays a crucial role in the financial side of providing IT services. The literature stated that based on ITIL, organizations should improve their OPEX forecasting to avoid unexpected OPEX. This will enable them to make more informed decisions regarding their finances.

5.4.2 Internal cost allocation files forecast trend utilized to update the OPEX forecast

Since some of the technologies are charged based on the quantity used by the accounts, the platform owners may encounter challenges in predicting their expenditure. It was suggested in section *5.3.2 Demand forecast meeting with the accounts* to hold regular meetings with the accounts to discuss demand forecasts regarding their future capacity

usage of technologies. In addition, key figures on future development would be recorded in the demand forecast template and used to update the internal cost allocation files forecast. This information can also be used to improve the accuracy of the OPEX forecasts.

After having discussions with the platform owners of the case company on the OPEX forecasting of technologies the following outcome was achieved. By analysing the technology usage numbers from the internal cost allocation files forecast, a trend can be identified. Utilizing the trend of technologies that are billed based on the quantity of use by the accounts can be used to update the OPEX forecast. To update the OPEX forecast with the usage trend identified, the trend is incorporated into the forecast.

When platform owners update the OPEX forecast, they rely on the trend from the internal cost allocation file regarding the technologies. By using the trend from the internal cost allocation file helps platform owners to ensure that their OPEX forecast for a particular technology follows the same pattern. By utilizing the trend from the internal cost allocation files forecast the platform owners can make assumptions on how the OPEX forecasts are going to develop in the future.

Although the internal cost allocation files forecasts are utilized to update the OPEX forecast, the process may not be entirely straightforward since the adaption of the trend differs between technologies. Therefore, developing the process of how the use of the trend is adapted between technologies requires further work, which will be done after the thesis is over.

Below is the updated process description of monthly forecast update OPEX and CAPEX.

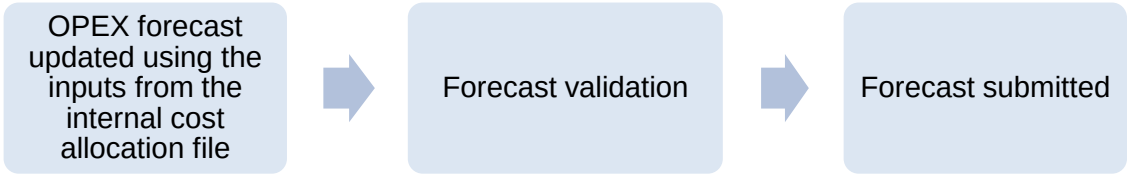

Figure 13. Updated process description monthly forecast update OPEX and CAPEX

5.5 Summary of the propositions

This section presents the summary of the proposals created on developing the integration between IT asset management and finance processes. The proposal for developing the integration between IT asset management and finance processes consists of updated processes for managing the support and maintenance contracts, internal cost allocation update and monthly forecast update OPEX.

The proposition on creating an Excel sheet in section *5.2.3 Developing an Excel sheet for tracking the ongoing contracts* in enhancing the management of support and maintenance contracts gives transparency to the management of the contracts. In addition, assigning a designated person to assist with the procurement process of acquiring contracts in section *5.2.2 Assigning a person to help in the procurement process* the workload of platform owners and their teams is reduced, allowing them to concentrate on specialized tasks that require their expertise.

The proposition for enhancing the capacity forecasting in section *5.3.2 Demand forecast meeting with the accounts* enables platform owners and accounts to have more communication regarding new projects and changes they are having discussions on with the customers. Furthermore, the proposition in section *5.3.3 Updating the internal cost allocation file using the demand forecast template* enables platform owners to have more accurate information in the internal cost allocation files forecast.

Proposition for enhancing the monthly forecast update regarding OPEX in section *5.4.2 Internal cost allocation files forecast data utilized to update the OPEX forecast* utilizes the information from the internal cost allocation file to predict the OPEX forecast more accurately. This helps the case company to make accurate assumptions on the trends that their OPEX is going to follow regarding assets that are billed based on the monthly usage of accounts.

By enhancing the following processes, the process integration between IT asset management and finance processes was able to be more effective. By gaining a better understanding of IT assets and more proactively managing their future capacity projections the case company is able to make more accurate and insightful financial decisions.

6 Validation of the proposal

This chapter focuses on the validation of the initial proposals that were developed in Chapter 5. This chapter covers the feedback that was received from the case company regarding the proposal, as well as the implementation and evaluation of the proposal. A validation stage was conducted to ensure the suitability of the integration enhancement propositions.

6.1 Overview of the validation stage

The validation stage consisted of having meetings with the platform owners regarding the propositions. In the meetings, the propositions were discussed, and feedback was received regarding the further development of the propositions. After having the validation meetings with the case company, minor changes were made to the proposals from the feedback that was received.

6.2 Implementation and further development of the support and maintenance contract management proposition

The assigned person started handling the support and maintenance contract renewals during the writing of this thesis. The feedback from the platform owners was that the process performed well. It was stated by the platform owners that the proposed enhancement suggestion regarding support and maintenance contract renewals enabled them to function more effectively as they were able to focus on their specialist tasks. Furthermore, the centralized way of handling the contracts in a shared Excel sheet enabled more transparency in the management of the contracts.

During the validation stage, further development of the proposition was discussed. A conclusion was made with the platform owners that automation would be implemented in the process. This automation would involve sending a notification three months prior to the contract's expiration date. The purpose of implementing this notification is to avoid any delays in renewing the contract before it expires.

This notification would be an email that would be generated to the assigned person the technology owner responsible for the particular contract. Since the contract are manually renewed implementing this notification would ensure that both the assigned person and the contract owner would be notified about the renewal. Moreover, generating the

notification three months before the expiration date ensures that the renewal process would be started once the email notification is received.

6.3 Implementation and further development of the capacity forecasting proposition

The demand forecast meetings were implemented during the writing of this thesis. The feedback received from the platform owners regarding the demand forecast meetings was that they were able to receive feedback from the accounts on a consistent basis. Furthermore, the platform owners expressed that the demand forecast meetings help them to be better prepared for the potential upcoming changes. This results in answering to customers' needs in a more effective matter. The platform owners also felt that using the weighted average from the demand forecast template to update the internal cost allocations forecast allows for more accurate estimations to be made.

During the validation stage, further development of the proposition was discussed with the platform owners. It was decided that a new section would be added to the beginning of the demand forecast meetings. Starting from the second meeting, a trend report in the form of a PowerPoint deck would be presented.

The trend report would consist of the actual usage of the technologies in a form of key figures and the forecasted numbers of the technologies. A comparison between the forecasted numbers and the actual usage of technologies would be presented. If there would be a difference between the actuals and the forecasted numbers, the reasons behind them would be discussed to prevent any gaps in information.

The purpose of discussing the comparison between the forecasted numbers and the actuals is to have a discussion about any changes that were not included in the forecast. In the meetings, the reasons for any inconsistencies in the forecast would be discussed and plans for improving forecast accuracy in the future would be analyzed. Having these discussions would allow the process to evolve and become more accurate in the future.

6.4 Further development of the monthly forecast update OPEX proposition

Since the proposition regarding the enhancement of OPEX forecasting requires further development, the proposition was not implemented during the writing of this thesis. However, the platform owners felt that the proposition for using the trend from the internal cost allocation files forecast to update the OPEX forecast regarding technologies that are billed based on the usage would help them to make more accurate forecasts.

The platform owners pointed out the fact which was brought up in chapter 5 that the implementation of the trend needs to be adapted according to technology. The reason for this is that the same approach of using the trend cannot be applied to every technology. This means additional development of the proposal will be necessary to tailor it to each specific technology. As implementing and further developing the proposal will take time, it will be carried out after the completion of this thesis.

6.5 Summary of the validation stage

According to the platform owners, the propositions responded to their needs and made the process integration more effective. From the value perspective, the platform owners felt that the proposed ideas brought clarity to the processes and made them more efficient.

The assigned person started managing the maintenance and support contracts using the Excel sheet which was created during the writing of this thesis. The response from the platform owners was very positive on this. Further development of the propositions was discussed with the platform owners and the conclusion was made that automation would be added to the processes in a form of notification regarding the expiration of a contract.

The demand forecast meetings and updating the internal cost allocation file using the demand forecast template were implemented during the writing of this thesis. The feedback gotten from the platform was that they were able to communicate with the accounts in an efficient manner. Further development of the proposition was discussed with the platform owners and a conclusion was made that a section would be added to the meeting. During this section, discussions would be had regarding a comparison between the forecasted numbers and the actuals.

Since the implementation of the monthly forecast update OPEX proposition needed further development, it was not implemented during the writing of this thesis. It was discussed with the platform owners that before implementing the proposal the adaptation of how the trend from the internal cost allocation would be utilized between the technologies needed further tailoring. It was agreed that this would be done after the thesis project was finished.

7 Summary and conclusion

This section introduces the summary and conclusions of the thesis. First, the executive summary is presented. After that, the next steps of the process development are introduced. Then an evaluation of the thesis is conducted and finally, the final words of the thesis are expressed.

7.1 Executive summary

The objective of this study was to do a mapping of the current processes and find possible ways to improve them and their integration. The outcome of this study was a proposal for enhancing process integration and updated process descriptions.

A Current State Analysis was conducted to enable an understating of how the current processes worked and integrated with each other. Based on the CSA three key findings were discovered. The first key finding was that the support and maintenance contracts are handled in a way which required optimization. The second key finding was that there was a lack of consistent feedback from the accounts regarding the demand forecast. The last key finding was that the case company is unable to forecast OPEX numbers consistently due to the lack of feedback from the accounts.

Based on the three findings available knowledge was explored. The available knowledge focused on ITIL 4 and its practices surrounding IT asset management, capacity management and financial processes. The available knowledge was researched to develop a comprehensive understanding of the subjects to give focus points on developing the proposal.

Next, the initial proposal was formed based on the CSA, available knowledge of ITIL and insight, discussion and brainstorming session that were had with the case company. In the initial proposal, propositions for enhancing the processes and their integration with each other were established. In the final stage, the propositions were validated and further development of the processes were discussed.

7.2 Next steps

In the following table the next steps for the process development are presented. The table also has the content of the next steps that needed to be made.

Process	Next step	Content
Support and maintenance contract management	Automation added to the process	Adding an automated notification alert in a form of an email to notify that the contract is going to expire within three months
Demand forecast meeting with accounts	Implementation of comparison between actuals and forecasted numbers	Adding a segment to the meeting with the accounts were actuals and forecasted numbers are compared. Reasons behind the differences are being evaluated
Monthly forecast update OPEX	Further development of the proposition	Developing the proposition so that the trend could be implemented to different technologies

Table 9 Next steps

The first next step is regarding the support and maintenance contract management process. To enhance the process an automation notification would be added to the process. This would ensure that the process would be started three months before the contract is about to expire.

The second next step would be regarding the demand forecast meetings with the accounts. To enable more accurate forecasting in the future a comparison between the forecasted numbers and actuals would be discussed and the reason behind the changes evaluated. This would enable the forecast to be more accurate in the future since discussions would be had on the reasons behind the changes.

The last next step is regarding the monthly forecast update OPEX process. To be able to implement the proposal further development would be needed. This development would focus on effectively utilizing the trend of updating various technologies. This is

necessary since some of the technologies require a different approach to implement the trend successfully.

7.3 Thesis evaluation: Objective vs. Results

The goal of this thesis was to do a mapping of the current processes and find possible ways for improving them and their integration. By comparing the objective of the thesis and the proposal that was created it can be stated that the thesis has met its expectations. The proposal has helped establish a more effective integration between IT asset management and finance processes.

Only minor adjustments were made to the original research design and the thesis plan was followed according to plan. It is important to mention that small adjustment was made to the objective of the thesis when the current state analysis was made. In addition, as there were multiple areas that could have needed improvement it was decided to focus on the selected three key findings to limit the scope of the thesis to the most essential once to the case company. This was done so that the workload of the thesis wasn't too excessive.

The propositions were based on the insights from the ITIL 4 Foundation literature. This literature provided valuable information that was essential in building the propositions. As a result, the reliability of this thesis can be considered good.

7.4 Final words

This thesis was a big learning experience for me. The writing of this thesis has given me a valuable opportunity to develop my professional knowledge and skills. Through this thesis, I have gained deeper understanding of efficient IT asset management, capacity management and service financial management.

The experience has been enjoyable, and I feel fortunate to have been able to contribute real value to the case company while also learning a lot in the process. Overall, this experience has been rewarding and an important chapter in my development as a professional.

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