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THE ACCOUNTANT'S ROLE IN THE 2020s

Case study: Kojamo Oyj

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ABSTRACT

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The aim of this thesis is to analyse and present the role of accountants in the 2020s, focusing on corporations' financial accountants. The commissioner of this thesis is Kojamo Oyj, the largest private residential real estate company in Finland. The company is going through a process of innovation in its accounting department and therefore it is interested in understanding how the accountant's role will change with the implementation of advanced accounting software programs.

The objective is to study the tasks that accountants will cover in the upcoming years, the following changes and the factors that affect these changes. With this information it will be possible to gain an understanding about the role of accountants within corporations.

As a qualitative research, the method applied was the case study method with semi structured interviews, in addition to academic literature as theoretical framework. Interviews were conducted with Kojamo's accountants and finance controller to understand their processes and their ideas about the accountant's role, and with accountants working for more developed companies from the accounting viewpoint in order to have also their perspective on the subject.

Based both on literature and interviews, the accountants' role is moving towards a position of data controller and analyser, affected by the development of automation within accounting processes. It is always more important for accountants to develop interaction skills to cooperate actively both with finance controller and other departments, in addition to be able to understand the whole process having the ability of analysing singular transactions.

The results achieved in this thesis can also be relevant for other companies which are developing their accounting activities and are interested in understanding how the changes will affect the accounting personnel. Here can be found also useful information for accounting agencies which are moving towards more automated accounting systems.

This thesis can be further developed by analysing the accounting systems from the technological point of view and assessing the real potential of technology in the accounting field. Accountants have ideas how could be improved the efficiency of accounting activities, but as they are not engineers, they do not know what technology's limits and possibilities are.

Keywords: accountant, automation, ERPS, financial accounting, digitalization

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1 INTRODUCTION

We are in 2020 and we have now entered in a new decade. As it was for 2000, when people were guessing how the new century will be and what kind of changes it will bring, in 2020, with the advent of the new decade, people will try to anticipate future trends and innovations for the upcoming decade. Of course, just at the end of this current decade we will be able to tell if things went as planned; the reality is that rarely predictions do really take place, and it is hard to predict future. Changes happen in every field for several reasons; the environment changes and companies need to adapt to it, trends change, dynamics change and so on, but the main reason is probably that human being looks for a constant development.

This thesis wants to focus on changes affecting the accounting sector. In fact, I believe we will witness a major change in this sector during the current decade, caused mainly by the intervention of artificial intelligence and digitalization. But the focus of this research will be on people because these changes will highly affect accountants' job and routines, and it is important for these people to consider how their job will look like in the future. Of course, this thesis will not provide hazardous guesses and exceptional ideas, rather it will focus on highly possible events based on qualitative research, modern technology achievements and systems already applied in the most advanced companies.

1.1 Thesis purpose and research questions

So, the main purpose of this thesis is to analyse how changes in the accounting sector will affect accountants' role. Through a detailed analysis of past and recent changes in the accounting field, the changes in the role of accountants will be discussed and the new outlook will be presented.

The commissioner of this thesis is Kojamo Oyj, the largest private residential real estate company in Finland, therefore this thesis aims to give directions to Kojamo's accounting department on how processes are changing and will change, in addition to explaining the new role accountants will cover within the organization. The focus will be on financial accountants working for large corporations.

The research problem has arisen because the commissioner is going through a process of modernization in its accounting department, caused mainly by the arrival of new advanced technologies and software programs. This process has at its core Kojamo's accountants and their relationship with modern technology. This matter is concerning the management as accountants need to be informed and prepared that their daily routine will change dramatically in the next years.

Accountants have already gone through several modernization steps, from completely paperwork to almost completely computerized, especially at Kojamo where accountants have a long experience of adapting to new technologies. But this time it will be different; practical accounting activities such as registering bills, calculating, producing income statement and balance sheet were somehow similar if carried out on paper or through computer, because the same practical operations were done. This time digitalization will allow such a high level of automation that all the activities that were taking most of accountants' time will be automated. For this reason, it is important to prepare the employees so they can adapt to these changes in the best way, knowing what their main responsibilities will be and how their activities will change.

The two main research questions that will guide this thesis are:

- What affects the role of the financial accountant?
- What will be the tasks of financial accountants?

The first question will focus on the practical elements that affect the accountants' activities and their role, while the latter one will analyse the new tasks that will be performed by accountants. These two questions will help to meet this thesis' purpose, which is to support Kojamo's management in this constantly changing environment with the evaluation of possible future changes in its accounting department during this decade and consequently the assessment of the new role that accountants will cover.

1.2 Methodology

The research method applied for this piece of research is the case study method. According to Merriam (2009, 41) a case study is used to analyse a contemporary phenomenon within a specific

entity, in this case within Kojamo's accounting department. Background theoretical literature which defines the area of interest is both English and Finnish because accounting rules and requirements can be slightly different between American and Finnish accounting, therefore in order to be highly reliable both literatures will be used. Bearing in mind that Kojamo is a Finnish company and follows Finnish accounting rules, Finnish literature will be given priority.

Qualitative research methods will be applied, because the research is based on observation and semi structured interviews, which are non-numerical data. In fact, the purpose of this thesis is to understand how accounting processes have changed during time and how it has affected the role of accountants. This purpose does not require any statistical research, rather a qualitative analysis of the phenomenon. (Taylor, Bogdan & DeVault 2015, 19.)

Semi structured interviews were chosen in order to allow interviewees explaining deeply their answers and giving other information related to the topic from their personal point of view. Same questions will have slightly different answers by different employees. For instance, finance controller, accountants and accounting team leader will have different points of view, although they all work in the same department. There are few main questions to give direction to the interviews, but yet those are flexible and adaptive for each interview. (Merriam 2009, 90.) It was planned to interview also Finnish accounting agencies to understand how accounting is proceeding in advanced accounting environments and how the role of accountants has changed there. Unfortunately, due to the current situation in which Coronavirus outbreak forced many companies to close or to apply remote work methods, some of the interview meetings with accounting agencies have been cancelled, some have changed in video calls and other agencies were just able to answer by email.

1.3 Thesis structure

The content structure of this thesis is planned in the following way: the starting point of this thesis will be provided by accounting literature both national and international. The accounting topic will be introduced in chapter 2, followed by a clear and complete view of accounting activities to understand what steps are required to produce financial statements and accounting information in general, in chapter 3. In chapter 4 accounting technologies such as ERP systems will be explained

mainly from the accountant's point of view rather than the technological one, given the subject of this thesis. This explanation about the technology intervention in accounting activities will support chapter 5 in the comparison of modern accounting activities with the past ones. From this information, the accountant's role will be presented and analysed in chapter 6.

After the theoretical segment, the focus will be on the case company Kojamo, in chapter 7. First, the analysis of the current situation in Kojamo's accounting department will be presented. In this way, it will be clear what are the main accounting goals and how the company is reaching those at this stage. This analysis will be carried out based on interviews with Kojamo's accountants and finance controller. Also accounting history and development of Kojamo's accounting department will be analysed to understand the overall progress and anticipate possible future changes. As far as Kojamo's accounting is concerned, the flow of information will be analysed. By this is meant how the accounting figures are taken, how they are processed and how they are finalized and published.

Then, in chapter 8 technologies and methods of more advanced companies from an accounting point of view will be taken in examination and compared. This will be possible by interviewing large corporations and accounting agencies operating in Finland, with more advanced accounting systems than Kojamo's ones. Changes and implementations done by these companies will be interesting to analyse because they will provide important guidelines and possibly show the path of Kojamo's future changes. With this information, Kojamo will be able to have expectations about future changes also in accountants' routines and job, being able to prepare its accountants to the change, without surprising them when the change has already occurred.

Chapter 9 will discuss the conclusion and present the accountant's role and its tasks at Kojamo during this decade. The thesis will end with chapter 10, which will summarize all the main points discussed in the thesis and discuss about the process of thesis' creation from the author's point of view.

2 WHAT IS ACCOUNTING

There are several definitions of accounting given by professors and experts, but one that explains well the term is given by McLaney and Atrill (2016, 2), who state that “accounting is concerned with collecting, analysing and communicating financial information”. This information is important because it is used by a variety of stakeholders to support the decision making, which is based on the reported data. (ibid.)

However forms of accounting have been witnessed since thousands of years, the modern accounting system was officially invented in 1494, when Luca Pacioli, Italian mathematician and economist, developed the double-entry bookkeeping system to keep track of the transactions. A short explanation of the idea of double-entry bookkeeping is given by Ebisike (2010, 18): business transactions are recorded in accounts, and each transaction is recorded in at least two accounts, in which at least one is registered as credit and one as debit. Total credit and debit have to be balanced, so they need to show the same number. In this way it is possible to check if the postings are correct. (ibid.)

The content of the system is the same used nowadays, with the exception that the form and purpose have changed. When it was created, the purpose of accounting was only to keep traceable track of each transaction, while nowadays it is more than that; it is used also to take future decisions and therefore there is much more active participation by many stakeholders. Form has changed in terms of the modality in which the process is carried out. In fact, in 1494 all the system was paper based, while nowadays computers and automation play a key role in the accounting process. (Britton and Waterson 2009, 4.)

An interesting statement expressed by Biagioni (1975, 67) underlined the fact that “accounting will survive only to the extent that the decision makers feel that the accounting system is providing relevant reports when compared to other sets of reports”. To this can be added that accounting will survive until it will be required by law, because since 1925 providing accounting information has been mandatory for Finnish companies and has been officially regulated by law (Tomperi 2020, cited 20.4.2020). These are the reasons why financial statements are required and therefore why accountants’ job is needed. Once there will be no need for accounting information to help in the decision making and law will not require financial statements, accountants’ job will end.

2.1 Stakeholders

As it was mentioned in the previous segment, accounting information helps people in decision making. This means that there are stakeholders interested in this information. We can identify these stakeholders by dividing them into user groups:

- customers, who might be interested to know if the company is able to continue its activities or will soon declare bankruptcy, for example
- competitors, to compare their performances, study their competitors, compare their market share or also study their competitors' future plans
- employees, to understand the financial stability of their company, and, if unstable, the chances of job cuts affecting them
- government, to control if the company is following the financial laws
- community representatives, to understand how much the company is contributing to the community
- investment analysts, to advice their clients if it is worth investing in the company and to create asset portfolios
- suppliers, to make sure the company is healthy and able to pay their suppliers.
- lenders, to understand the ability of the company to repay the loan in time
- managers, to have control over the company's activities, to evaluate possible investments and make future plans
- owners, to manage their ownership, if the company is overvalued in share price, they could decide to sell part of their ownership and make cash profits, while if it is undervalued, they might decide to increase their ownership buying more shares. (McLaney & Atrill 2016, 2-4.)

These are the most common stakeholders of the companies' financial information, and short examples of the reasons why they might be interested in it were given. Of course, stakeholders can be more, and the reasons as well, but the purpose of this list is just to show how many different user groups accountants should consider. (ibid.)

This variety of users generates also conflict of interests between them. For instance, agency problems may arise between shareholders and managers, usually to determine the distribution of the company's wealth. Managers are interested in increasing their income, while shareholders want the share price and the value of the company to increase. For this reason, companies have written rules collected in the corporate governance. Financial statements can be used to monitor wealth distribution, and check if it follows the agreements done. (McLaney & Atrill 2016, 4-5.)

It is impossible for accountants, at least at the moment, to provide all the information needed by each of the stakeholders, but nevertheless the information should be at least useful for each one of them. Financial statements are the most complete sources of financial information of companies; therefore, it is important to be as complete and exhaustive as possible. Financial statements should give the right and clear picture of a business' financial health. (ibid., 5-6.)

Financial statements are given a big and important role in decision making, from managers, investors and other stakeholders. As a consequence, companies usually provide much additional information, even though it is not required by accounting regulations. Particularly, financial information is mostly relevant for listed companies since the price of one share of ownership can undergo important variations when companies announce their earnings. In fact, often investors base their future expectations about companies on the financial statements. (ibid., 6-7.)

From financial statements it is possible to evaluate financial health of a company analysing the amount of debt compared to the equity and assets; comparing the revenues and profits year over year it is possible to understand if the company is expanding, stable or contracting. Stakeholders can make all the financial evaluations they want based on the financial statements. (Warren, Jonick & Schneider 2019, 824-830.) One of the reasons why investors highly consider financial statements is that they show facts and numbers, comparable with other companies. It is not about opinions or personal ideas; it is objective and based purely on facts. Also, information contained in financial statements of public companies is easily available to everyone who has access to the internet, so the information is the same for everyone and it is then investor's job to select the most appealing companies to invest in.

2.2 Financial accounting vs management accounting

Accounting is divided into two types: financial and management accounting. The first is produced for the external public, while the second for internal purposes, just for the company's managers to help them manage and take daily decisions. (Gowthorpe 2011, 21.)

As expressed by McLaney and Atrill (2016, 13-15), the main differences between the two accounting types are the followings:

Nature of the reports

Financial accounting reports are directed to a wide range of users, therefore they have a general purpose, while management accounting reports are more customized, they focus on certain determined aspects and are possibly directed to specific managers.

Level of detail

Financial accounting reports contain a large quantity of information to provide the best possible representation of the company's overall performances, but it is not extremely detailed because it already covers many different aspects of the business' financial information, while management accounting reports are more focused and detailed towards the most relevant information needed by managers to support decision making.

Regulations

Since financial accounting reports have an external use, they are strictly regulated by accounting regulations that set certain standards to be followed, both at a national and international level. On the other hand, management accounting reports have an internal use and hence they are not regulated by any law; accountants can decide what is the most effective way to present the report to their managers.

Reporting interval

Companies are asked to present their financial statements at least once a year, with some companies that present their own twice a year or quarterly. Financial accounting reports need to be prepared consequently at least once a year, at the ending of the accounting period. These rules do not apply to management accounting reports because of their internal use purposes. These

reports can be produced any time managers need them to make a decision. Therefore, management accounting is likely to be asked more frequently.

Time orientation

Financial accounting reports are produced after the accounting period ended, showing just past performances, while management accounting reports are the most possible up to date and relevant to allow future projections. As soon as the financial statements are published, they are already old because they refer to the past months, and now the situation can already be completely different, both in positive and in negative. For managers it is essential to have the most updated information possible in order to take the best decisions.

Range and quality of information

Financial accounting reports provide monetary, objective and verifiable information, while management accounting reports may include also non-financial information such as productivity ratios, employment information and so on. Information provided by financial accounting has to be verifiable because it is regulated by law, assumptions cannot be made, while management accounting can also reflect some of the accountant's ideas and projections. There is no standard information for management accounting, all the information that can add value to the decision-making process is accepted.

However these two typologies of accounting have several common aspects, it is clear the difference that financial accounting is more objective, regulated and subjected to external laws, while management accounting can be more variable and customisable depending on the management's needs and the type of decision has to be taken. Table 1 sums up the main differences between financial and management accounting. (McLaney & Atrill 2016, 13-15.)

TABLE 1. *Financial accounting vs management accounting (Based on McLaney & Atrill 2016, 14)*

Element of comparison	Financial accounting	Management accounting
User	Stakeholders (shareholders, competitors, lenders etc.)	Company's managers
Nature of reports	General purpose	Specific and customised
Level of detail	Wide overview	Very detailed
Regulations	Accounting regulation	No regulations
Reporting interval	At the ending of the accounting period	As often as managers require
Time orientation	Past performances	Past performances and future projections
Range and quality of information	Objective and verifiable financial information	Includes both financial and non-financial information

2.3 Accounting differences among different business structures

Accounting requirements differ based on the form of the business' organisation. Accounting for listed companies is much more complex than for sole traders or partnerships. Regulation is more strict and more people are interested in the financial information of listed companies rather than partnerships or sole traders; potential shareholders interested in buying shares of the company, organizations such as credit ranking agencies or competitors, stakeholders such as lenders or potential lenders, employees, trade unions, suppliers, government, academics, students, customers and general public are all examples of entities interested in companies' financial statements. Listed companies are usually large firms where often shareholders are not also directors, therefore they also need public financial information to understand how their company is performing, because they cannot consult the financial information internal to the company which is available to managers. (Gowthorpe 2011, 17-20.)

Large companies might have their own accounting department; hence, their accounting department is involved just with the accounting activities of that company. On the other hand, small companies, sole traders and partnerships might not have resources or accounting abilities to perform

accounting activities by themselves, so they outsource their accounting department to accounting agencies that take care of several businesses' accounting information.

2.4 Characteristics of accounting information

Accounting information has two fundamental qualities: relevance and faithful representation. With relevance is meant that accounting information should be able to influence decision makers with information that is useful to predict future performances and confirm past events. The accounting information should be neutral, free of errors and also should represent completely the organization: therefore, it should be the best unbiased representation possible of the business. (McLaney & Atrill 2016, 7-8.)

So, relevance and faithful representation are the two fundamental qualities that every accounting information must respect. Other qualities that increase the quality of the information, but are not strictly required are comparability, verifiability, timeliness, and understandability. Usually accounting information is used to compare performances of different businesses or also the same business but over different years to identify trends and predict future events, therefore it is useful if it is easy to be comparable. End users might be reassured that the information respects the faithful representation quality if the data is verifiable and supported by evidence. It is also important for the accounting information to be prepared and announced in time to avoid obsolescence and therefore reducing its relevance. Lastly, the information should be clear easy to understand, following the standards set by the regulatory body. (ibid.)

The clear and faithful representation of business' financial health is given by three main financial statements produced by financial accountants:

- statement of cash flows, which shows how cash is used within the business
- income statement, which shows profits or losses for the period calculated by deducting all the expenses from the revenues
- balance sheet, that shows what company owns and owes in form of assets, liabilities and equity. (McLaney & Atrill 2016, 71-72)

These three financial statements are published at the end of each accounting period, that can be one, two or four times a year. This data is highly considered by external user groups, especially investors who might be interested in investing in the company buying shares, or lenders who are interested in the financial solidity of the company and in its ability of repaying the debts. (McLaney & Atrill 2016, 71-72.)

3 ACCOUNTING ACTIVITIES

To understand the role of accountants, it is fundamental to know what accountants do and how they produce financial statements. As already stated, the purpose of accountants is to produce financial statements, but how they practically create a financial statement? Where they get the information from?

Figure 1 provides an idea about the different steps accountants follow, and this section will explain better each step, from the different sources of information to the production of the final financial statements.

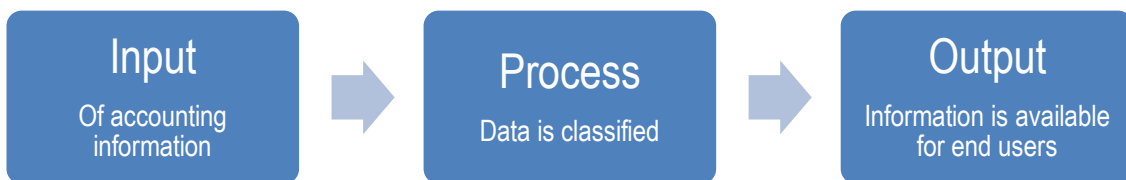


FIGURE 1. Accounting process

An overview of the accounting cycle is provided by figure 2:

- analyse source documents refers to the analysis of the transactions that occur between the company and suppliers, clients and other stakeholders
- transactions are recorded in accounting software programs into accounts or sub accounts, this process is also known as “journalizing”
- the accounting information is then posted in the general ledger
- a trial balance is produced, the financial data is summarised, and accountant verifies that the information is correct and balanced
- financial statements are prepared based on the data in the trial balance with the period end adjustments
- lastly, financial statements are analysed.

Usually the first three processes are given to bookkeepers, while the last three to accountants. (Alanis Business Academy 2016, cited 20.4.2020.)

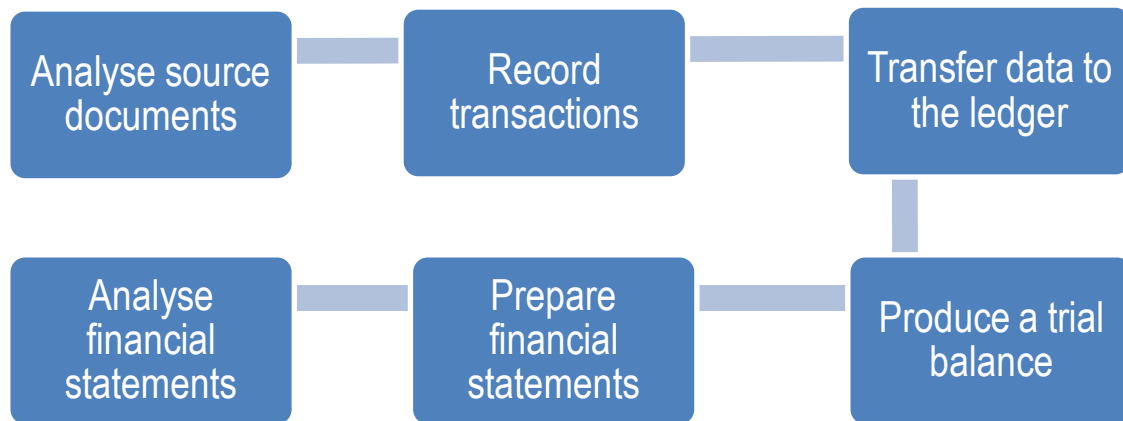


FIGURE 2. Accounting cycle (Based on Alanis Business Academy 2016, cited 20.4.2020)

3.1 Input of accounting information

In large companies accounting information comes from different functions. These functions can be executed internally, outsourced completely or also just in part, it depends on several factors such as convenience and business model. Usually, in large companies, the responsibility for these processes can be given to specific bookkeepers or teams within the accounting department, and these are considered as bookkeeping activities. Accountants then process the information and create financial statements. On the other hand, in smaller companies, accountants perform both bookkeeping and accounting tasks; they record all the transactions and produce financial statements. (Alanis Business Academy 2016, cited 20.4.2020.)

In Finland, the most common division of the various sources of information is accounts payable, accounts receivable, travel expenses, fixed asset accounting and payroll records. These functions will be introduced in this segment to give an understanding about the accounting process as a

whole, from the source to the actual accounting activities. The processes described in this chapter are the ones that create the largest amount of accounting information; however, information comes also from other sources such as bank account reconciliations, inventory, interest income and expense. (Lahti & Salminen 2014, 150-151.)

3.1.1 Accounts payable

In the accounting process, accounts payable function is the one that requires the most labour force because of the amount of bills to be handled and the process required. As showed in Figure 3, the accounts payable process starts when the purchase invoice is received. The accounts payable clerk checks that all the information of the supplier's invoice matches with other two documents: the purchase order from the company's purchasing department and the receipt from the receiving department. (Bragg 2010, 19.) The invoice is posted and sent to inspector and acceptor to validate it; these two people are usually responsible for the purchase of the product of that specific bill. Once inspector and acceptor validate it, the invoice is sent back to the accounts payable clerk who registers it in the right account, pays the invoice and stores it. Accounts payable clerks' major tasks are to control the information, post the invoice and send it to the acceptor. These tasks depend on the level of automation in the accounting process of each organization. (Lahti & Salminen 2014, 52-55.) This process is also called "Procure to Pay" (ibid., 16).

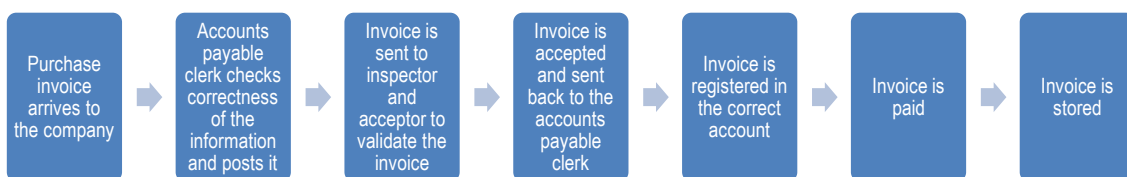


FIGURE 3. Accounts payable process (Based on Lahti & Salminen 2014, 57)

3.1.2 Accounts receivable

Billing is a critical process for companies. It is important to commit the less possible errors to avoid delays in getting the payments from clients. Sales invoices are directly seen by clients; hence, it is part of the image companies give to the external world. Billing process starts with the input of information into the invoice and ends when the client pays, and the transaction is seen in the general ledger. The bill is then stored. (Lahti & Salminen 2014, 78-79.)

The decision of the product, price and delivery is done by sales department, here we analyse just what happens in the accounting department. Therefore, the sales deal is decided elsewhere, and the accounts receivable department produces just the invoice itself with the information provided by the sales department. (ibid.)

The billing process can be divided in 4 main steps, as showed in Figure 4:

1. Invoice compilation, based on the deal agreement made by the sales department, the accounts receivable clerk produces the sales invoice.
2. Invoice is sent to the client.
3. Invoice is posted. Once the client pays the bill, the transaction is recorded in the accounting system.
4. Invoice is stored. (ibid.)

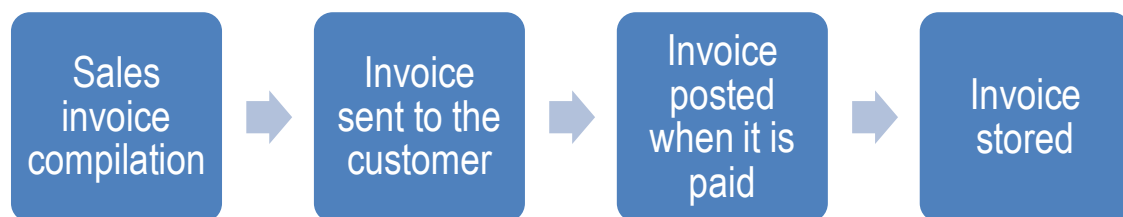


FIGURE 4. Accounts payable process

The principal role of accounts receivable clerks is to check that notes receivable are paid and follow the situation of the notes not paid in time. Usually in Finland as soon as the customer pays the invoice, the transaction moves directly into the seller's accounting system because the systems recognises the reference number of the invoice paid. Nowadays, in Finland, the majority of the

companies have most of the accounts receivable process automated. (Lahti & Salminen 2014, 96-98.) This process is also called “Order to Cash” (ibid., 17).

3.1.3 Travel expenses

Here are included all the expenses related to employees, that can be for instance the compensation they receive to drive from home to the office or other expenses they pay but the company should pay for such as flights, trains, hotels or other working related expenses. Also office materials, food and drinks offered by the company, restaurant expenses for instance after business meetings and so on. (Lahti & Salminen 2014, 101.)

The process is quite straight forward as summarized in Figure 5. It begins with the receipt that shows the employee has paid for a certain product or service for working purposes. The receipt is sent to the superior who ascertains that the company should pay for that expense, and then to the accounting department which has the task of paying back the amount of the expense to the employee and register the transaction in the accounting system. As for all the invoices and transactions, the receipt is then stored. (ibid., 102.)

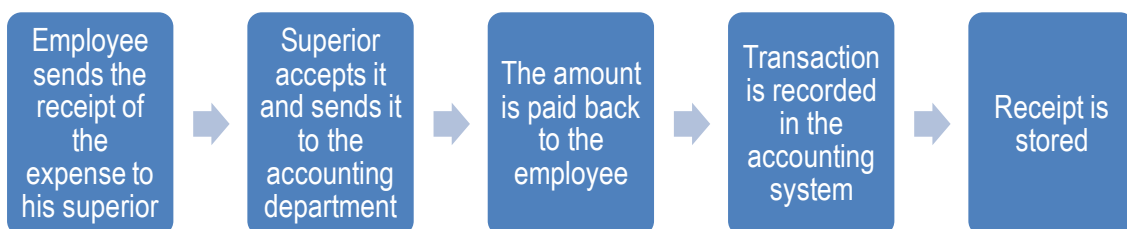


FIGURE 5. Travel expenses

This “travel expenses” can be considered as a process itself usually in larger companies but when there are just a few employees who cause travel expenses, it is unnecessary to create a process just for few bills a month. In some companies these travel expenses are already added in the salary, instead of making separate payments for them. There is no need for companies to improve the efficiency of travel expenses processes because of the small volumes it creates. Thus, if a company has to decide if improving accounts payable, receivable or travel expenses process, it will prefer to

enhance the first two. But if wanted, also this process can be automated by using real-time information and digital receipts. (ibid., 102-103.) The travel expenses process can be seen as part of the Procure to Pay process (ibid., 17).

3.1.4 Fixed assets accounting process

Fixed assets accounting process focuses on equipment-related accounting functions. These functions include registering the purchase of equipment, calculate and register its depreciation, recording equipment sales and salvage value. Once the information related to the equipment is posted in the asset ledger account, it is transferred in the general ledger. Lastly, a report for the asset account is created. All this process is visually explained by Figure 6. (Lahti & Salminen 2014, 130-131.)

Small companies use Excel to follow equipment and its value, but larger companies prefer to use dedicated software programs. These programs allow a more automated update of equipment's value in the accounting system and they create automatically reports used for tax and financial statements purposes. (ibid.)



FIGURE 6. Fixed assets accounting process

3.1.5 Payroll process

Payroll administration processes include reviewing contracts and assessing salaries, following wage costs, supporting managers, storing information, filling employment certificates, reporting and updating employees' information. Payroll process itself includes payroll and recording information in the accounting system, salary payment, prepayment, reporting to authorities such as tax office and social insurance institution, collect information about working hours, analysing working hours

information, updating each employee's information and storing the information. (Lahti & Salminen 2014, 135-137.)

The steps shown in Figure 7 are the followings:

1. Information about working hours and salary of each employee is collected.
2. Information is analysed and possibly corrected. The information is organised in a way that makes possible the payroll process and salaries' payment. This step is hard to automate; therefore, it is still manual in many organizations.
3. The information is transferred to the payroll program from where the salaries will be automatically paid.
4. Payroll information is reported to stakeholders, for instance to the employees and authorities that need the information. Reporting and storing can be efficiently performed digitally and automatically. (Lahti & Salminen 2014 136-144.)

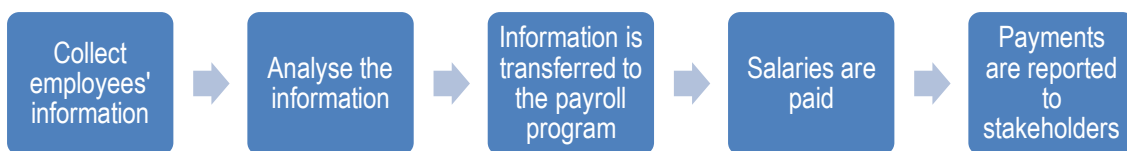


FIGURE 7. Payroll process

3.2 Processing data and output of financial statements

Once bookkeepers have registered all the transactions in the correct accounts, accountants produce the trial balance from the general ledger and the information will then be reordered forming the financial statements. Accountants put together all the information derived from all the previous bookkeeping functions. They arrange all the transactions based on the accounting period, check that all the information is transferred correctly, handle the tax payment and create the financial statements. (Lahti & Salminen 2014, 150-153.) This process is also called "Record to Report" (ibid., 17).

The accounting activities are divided into three main steps:

- Opening balance: ending balance from the balance sheet of the previous accounting period is posted as opening balance of the following one.
- Transactions are recorded in accounts in two places: in date order in the journal, and in account order in the ledger.
- Ending balance: each account sums up all the transactions occurred during the accounting period in the trial balance. Period end adjustments for accruals, deferrals, bad debts and depreciation are added (Britton & Waterston 2009, 120-122) and from the adjusted trial balance the accounts are allocated either in the income statement or balance sheet. Other documents produced in this step are the operational report and cash flow statement. (Tomperi 2020, cited 20.4.2020.)

The income statement shows the revenues, expenses and consequent profits or losses for the accounting period. The balance sheet shows the financial position of the business in terms of assets, liabilities and shareholders' equity. Assets are divided into current and long term; in current assets we can find for instance cash and cash equivalents, inventory and accounts receivable. On the other hand, in long term assets we find equipment, buildings, intangible assets and similar elements. Also liabilities are divided into current and long term; accounts payable, short-term debts and salaries payable are examples of current liabilities, while loans and other long-term liabilities are found in long-term liabilities. The equity section includes common stocks, additional paid-in capital, retained earnings and treasury stock. The statement of cash flow shows how cash flows in and out the business and it is divided in three parts: cash flow from operating activities, from investing activities and from financing activities. (Ebisike 2010, 26-34.)

After these three financial statements are ready, accountants are asked also to execute other reporting tasks, especially for managers and internal stakeholders. Reporting is divided in external, usually performed by financial accountants, and internal, usually performed by management accountants. The differences are summarized in Figure 8. (Lahti & Salminen 2014, 173.)

External reporting includes the production of financial statements and informing authorities such as tax office, while internal reporting produces information for internal uses in the company, therefore for management but also employees. There is not much information to be added to external reporting, it has already been explained enough, but this cannot be said for the internal one. In fact, internal reporting is more detailed and customized; an excellent internal reporting takes into

account business strategy and business model and helps to forecast future scenarios. (Lahti & Salminen 2014, 176-177.)

There are three main areas for internal reporting:

- Financial reporting includes the three financial statements: income statement, balance sheet and cash flow statement.
- Corporate performance reporting includes activities that support the financial planning of the business. The information provided in internal reports is more detailed and complete than in external reporting. Depending on the need of the internal report, the information is provided to offer the best possible analysis about the subject of the matter that the managers need to discuss about. An important area of Corporate performance reporting is budgeting and forecasting. Budgeting can be executed in different ways, for instance rough budgeting might consider just overall sales and cost of sales, while more precise budgeting processes might identify more specific budgets and forecasts of specific products or services.
- Business intelligence and analytics is a developed system of strategies and technologies aimed to analyse and forecast data. This leads to an optimal support for decision making and improvement of the performances. (Lahti & Salminen 2014, 176-182.)



FIGURE 8. External vs internal reporting

4 TECHNOLOGY IN ACCOUNTING

Technology has largely affected the majority of sectors worldwide, and at some grade every industry. Of course, accounting has not been an exception. Technology has covered a big role in modern accounting thanks to spreadsheets such as Excel where it is easy to make calculations and tables, databases where lots of data is stored and easily accessible, emails through which companies can communicate any kind of relevant information needed and online websites provide accessible reports for external stakeholders. However, despite the fact that accounting would theoretically be an easy sector to automate, there is still potential for huge improvements for many reasons. (Aho 2019, 17-18.)

There is a question that can easily arise while thinking about technology in accounting: why if accounting is just about recording numbers, calculating, transferring, storing and analysing, there are still companies where everything is executed manually, and in the majority of mid-sized companies the accounting process is not completely automated yet?

There are multiple reasons for this matter; according to Aho (ibid.) accounting is not an activity that produces income and therefore technology improvements have focused on other operations such as production, construction, manufacturing and other sources of income. Small and mid-sized companies might not find the investment in a completely automated accounting system a profitable investment considering the volume of the accounting information the company processes. Instead, those companies are more inclined towards outsourcing their accounting operations to accounting agencies, which are more likely to have advanced accounting systems.

Computer-based accounting systems minimize the risk of arithmetical errors and also make sure that all entries are balanced in the double entry bookkeeping system, avoiding fraud related risks. Common practical mistakes that can happen if bookkeeping is done manually is that debit might be forgotten to balance with credit and vice versa, numbers might be different and therefore not balanced, or also two debits can be registered instead of a debit and credit. (Britton & Waterston 2009, 316-318.)

Still, computer-based accounting systems are not completely error-free because of human being interaction; in fact, until it will be completely automated, invoices might be posted in the wrong account because of a human error and probably lack of complete objectivity, or wrong customer

can be credited with a receipt if a wrong code is inserted in the system. As long as human subjectivity and faultiness is present in the accounting process, accounting cannot be absolutely perfect. Computers make sure that all they can check and control is sound from a mathematical viewpoint, but if the information accountants have to post is not codable by the machine, it will be impossible for the AI to check if the posting has the right customer and account. When all the receipts will be digital and completely codable, AI will be able to check also that information, and possibly automatically post it. This process will be faster, more reliable and scalable once this complete bookkeeping automation will be available. (Britton & Waterston 2009, 316-318.)

All transactions registered in computer-based accounting systems are traceable in an audit trail. This allows to see who has done what, and each user has access just to its own area of competence, that might be sales ledger, purchases ledger and so on. This mitigates fraud risks as there are several layers receipts have to go through before they are paid, and employees cannot hide anything. Audit trail is also very efficient in discovering errors, which can be easily corrected in the double entry system. (ibid., 319.)

If accounting activities are performed manually, it is required to move the transactions with the same data from an account to another, for instance when a receipt is delivered and when it is paid, resulting in a time consuming activity if compared to accounting systems where these movements are completely automated. It is logical to question why if data is inserted to produce an invoice, the same data cannot be automatically transferred to the company that receives the invoice. There are two main reasons: data may have different format and also security issues may arise because it would allow a third-party to interact directly with your accounting system. (ibid., 324-326.)

The structure of data storage and format is very different between companies, and it would require a huge effort to change all the structures and move towards one only standardized structure with the same format. If this standard could be reached one day, it would dramatically change the accounting processes. In fact, when a company sends an invoice, this invoice would automatically be registered in the other company's accounting system avoiding all the intermediate human activities that could cause errors. When this other company pays the bill, all the information would transfer automatically back to the first company and this would result in savings in time, errors and costs. (Britton & Waterston 2009, 324-327.)

The second problem, security, is not actually a too big one. In fact, as it is already done with normal users of an accounting system, also third-party companies could get authorization to access just to a certain area of the ledger, minimizing fraud issues. Without going too deep into technological features, XML or eXtensible Mark-up Language is an informatic language adopted by some companies to follow a specific universal format that would make possible the unification of the whole accounting systems under the same format. (ibid.)

So, technology has already intervened in accounting activities, but automation is still improving. According to Aho (2019, 18), full automation will be achieved when all the required information is in coded format, all the information is digitalized, law systems are incorporated in the technology, there are universally standardized accounting and bookkeeping files and the norms concerning each customer will be implemented in the system.

To sum up, the main activities of bookkeeping and accounting regard processing high volume of data, saving information, calculating numbers, following the same routine every time and every day, and all those activities can be done better, faster and without errors by artificial intelligence. For this reason AI will replace all the activities that take the majority of the accountants' working time, moving their focus and tasks to more human-related activities such as consulting, customer service and keeping contact with their clients and other departments. (ibid., 17.)

4.1 Digital accounting

Historically, Finland has been a pioneer in moving from paper-based to computer-based accounting; already in 1997 it was possible to have completely computer-based accounting systems. Nowadays, the accounting level is still advanced in Finland, but not as advanced as it was predictable in the 2000's. Just among the 500 largest Finnish corporations the automation of accounting systems has gone far, while medium and small sized companies are advancing slower towards digital accounting. (Lahti & Salminen 2014, 28-32.)

With digital accounting is meant handling, transferring, storing and presenting information in electronic form. Data is saved into databases and the information is located in applications and software programs. Digital information is more efficient and faster to handle, transfer, present and store than a classical paper-based information. (Lahti & Salminen 2014, 19.)

Digital accounting refers also to the automation of the whole information flow through accounting activities in a digital form. In order to succeed in digital accounting perfectly, also all the organization's stakeholders should use the same channels, so that all the process is integrated among the companies and people and all the information flow can be automated. For instance, if the supplier sends paper-based invoices, the receiver has to scan it and send the electronical version in the software. Because of this avoidable manual step, the processes would not be part of digital accounting, but instead part of electronical accounting. Electronical accounting is the step that comes before the digital one, and it is the one where many companies are now. (ibid., 26.)

Companies, especially the largest ones, transmit their electronical information through the so-called Electronic Data Interchange (EDI). This enables companies to send each other electronical information. Information which is transferred can be related to orders, payments, tax, logistics, warehousing and insurance. Advantages that this system apport is for instance a faster information transmission, fewer errors, less costs and enhanced information management. From the business point of view, customers are more satisfied, competitiveness is higher and the internal business' processes are overall improved. Lastly, stakeholders' advantages are related to the efficiency in the coordination, collaboration and communication among stakeholders. (ibid., 20-21.)

Limits in reaching digital accounting are the lack of proper financial software programs, the slowness of people and organizations in adapting to big technological changes, the complexity of the technology and the high implementing costs. However, the cost savings related to its implementation are convenient in the longer term, especially in companies where there is a large amount of information flow. During the years these limits have decreased, and more solutions have been available to companies of different sizes. (ibid., 30.)

An example of the efficiency of digital accounting is for instance when the supplier sends a digital or electronical invoice to the buyer, all the information is automatically transferred from the supplier to the buyer's bookkeeping, without the need of manually allocating the cost. This level of automation will be achieved just when all the companies will use software programs able to read each other's codes. But as explained by Britton and Waterston (2009, 326) at the moment this change would require a too big effort and investment that it is not yet a practical solution.

Lahti and Salminen (2014, 32-33) affirm also that efficiency in accounting activities would increase between 30 and 50% when the process will be completely digital because the same information is not processed twice and the information is stored just in one place. Singular processes can be improved in efficiency by also 90%. Higher efficiency means also cost savings; savings from a less need for workforce, elimination of physical storage space and from other supporting activities.

In practice, "digital accounting is a process composed by people, work organization, information system, technology and the easiest and smoothest possible operating chain where automation eliminates unnecessary and overlapping activities by utilizing financial information in digital form" (Lahti & Salminen, 2014, 25). The idea is to simplify the most possible all the processes and automate them.

Digitalisation creates time and space independency. In fact, it is not needed an office or a determined place to execute the work, a computer with internet connection is enough. Information in digital form is easy to transfer, store and find. Automation enables to process all transactions without the need of manual work, that could lead to delays in payments and additional costs. All human-related drawbacks are eliminated; this will mean less errors derived by manual input and calculations. However, it is important that automated processes are followed to be sure errors do not occur, because if they occur, the amount of errors would be greater than before, and it would need a lot of work to correct the information. Digital automation is also a more ecological solution: it decreases pollution because less transportation is needed, less paper is produced and less electricity and heat are used to maintain physical storage spaces, scanners and printers. (ibid. 32-33.)

Accounting agencies which are not able to innovate and move towards digital accounting will be in trouble when their competitors will provide faster, error free, cheaper and overall better accounting services to their customers. Of course, bigger accounting agencies have more financial resources they can use to innovate and move faster towards digital accounting, while smaller ones have more limits in expanding and scaling their business. (Metsä-Tökilä 2019, 35-36)

For big companies, digitalization is the only way companies can be competitive in a changing and always more demanding environment. Without electronic devices it would be impossible for global companies to monitor in real-time what is happening to their branches located in other countries. Digitalization is a huge help when a business needs to be scaled. (Lahti & Salminen 2014, 33.)

The goal of digitalization is to reduce routine activities, enhance risk management and keep all the information as updated as possible, in such a way that the business has real-time financial information at hand. When all the information is available in real-time, it can be automatically provided to other sources such as tax office without any manual action. This is connected with self-service possibilities, referring to the opportunity of looking for the information you need by yourself, whenever you need. Everything is in the cloud or software. The final objective of digital accounting is to use bank statement and digital invoices to perform the whole automation of the bookkeeping process. (ibid., 20-33.)

To sum up, this is the list of the features of digital accounting:

- All the accounting information is in electronical form and coded
- The processes of transactions and reporting are automated
- The information is transferred electronically through software programs
- The information circulating within the company is completely electronical
- The information is stored in electronical form
- The information is available in electronical form
- The software programs are all integrated in the processes. (ibid., 26.)

4.2 ERP systems

Enterprise resource planning systems, known as ERPS, have directly affected all the processes within organizations, including accounting. The most known ERPS is SAP, which integrates in one system several different “legacy” systems that were required to control and manage the company. SAP is a system organised on processes, rather than functions, developed in 1972. Implementing a system such as SAP is certainly expensive, but it avoids all the costs relative to the maintenance and update of several different systems. (Scapens & Jazayeri 1998, 46-49.)

When companies implement SAP in their business, they need to have a clear idea about their processes, since the system is integrated across the different departments. SAP implements in one system dozens of smaller systems that were previously separated, and this is one of the reasons why it is a highly complex system. SAP has a standard configuration for each industry, but since

every organization is different, it is usually also customised based on the organization's needs and processes. (Scapens & Jazayeri 1998, 46-49.)

Scapens and Jazayeri (1998, 46-49) refer to Bancroft when they explain the limitations that affect SAP:

- SAP is based on a 1980s technology. This can be seen both as a negative but also as a positive feature. The system being highly complex requires high level engineers, who are very expensive. This is one of the reasons why the technology has not been updated. Another reason is that there are not many better systems available at the moment and they are still the market leader (SAP 2019, cited 20.5.2020). The positive side is that it is a reliable technology that has gone through all the different stages of information technology and digitalization. This has also saved money to the companies that did not have to constantly pay for new versions and systems.
- Another issue that has been registered is the lack of flexibility. In fact, despite being flexible for different industries in the US, it is not compatible with certain companies in different countries because of its centralised and structured configuration.
- As already addressed, SAP is a highly complex system to be implemented in an organisation, and it also requires a deep knowledge of the organisation's management about the structure and processes of the company.
- However SAP is customisable, not all the organization structures can fit with the system, leading to a system that is not the most efficient possible.

SAP is a system both centralized and decentralized; it is centralised, in a way that the processes of the whole company are integrated in SAP. Therefore, there is a centralised accounting department instead of several different locations with their own accountants. At the same time there is the decentralisation of data, because managers can directly have access to all the information that once was accessible just to management accountants, who had to report the information to the management. In this case accountants' role is just educational in terms of explaining what data is available, where and when to the managers. (Scapens & Jazayeri 1998, 46-49.)

So, now it is clear that the role of accountants as mere information provider is ended with the development and implementation of ERPS. Now the information is in SAP and it is available to the managers, but the advantage accountants have is a better understanding about the information and where it comes from. Accountants support managers and controllers making sure the

information is correct and providing more information to analyse specific data. (Scapens & Jazayeri 1998, 46-49.)

4.3 Implementing new technologies

When a company wants to change something in its current processes, the first thing to do is the analysis of the current situation and systems. Then, it is always important to carry out a detailed cost-benefit analysis, to make sure that the change is actually convenient. In the costs has to be taken into account not only the new equipment but also all the consequent expenses related to personnel training, travel, services and so on. For the benefits as well it is important to take into account also all the indirect savings that the new system generates. (Bragg 2010, 10.)

Employees might be against a sudden and drastic change; hence it is better to plan carefully the steps of the change and maybe spread it on a longer period of time. Also allowing employees to get used to the change and making them actively participate in the process of innovation increases the employees' satisfaction. (ibid.)

As far as implementation of new technology is concerned, sometimes it is better to wait for a tested and proved product rather than a completely new one that might still present errors, bugs and other issues. Another important point is testing the new system. Before the system is taken into use by employees, it is extremely important that the system is able to perform all the possible actions needed without crashes nor failures caused for example by the amount of users working at the same time or by the complexity of the actions. The last thing to do before taking into regular use the new system is to train the employees. This is preferable to be conducted hands-on and a short time before the introduction of the system in order to be fresh in employees' minds. (ibid., 10-12.)

After the implementation is a good practice to produce a post-implementation review to analyse the overall quality of the innovation process, if it went as planned, if cost-benefit analysis were actually as preannounced and how this process can be more efficient in the future. It is fundamental to make sure that there are not unresolved problems concerning the implementation of the new system because those would affect the satisfaction of the end users. (Bragg 2010, 12.)

An important role during this whole process is covered by communication. In fact, it is important to communicate clearly and in time all the information each employee should know in order to make

this process as smooth as possible, with the support and participation of each member. If communication fails, there is high chance that also the implementation will not be successful, mainly because people who are the most affected by the change will work against it, feeling overwhelmed, as it would change their routines and they are not prepared to it. (Bragg 2010, 12.)

4.4 Ideal situation

Companies, especially the largest ones together with accounting agencies, are all working towards a more efficient, digital and automated accounting system, and they will achieve the ideal situation once they will accomplish to complete the following steps:

- The company uses just one ERP-system and continuously updates it.
- The processes and practices are standardized.
- The processes are automated, flexible and scalable.
- The processes are all integrated and transfer data to the same system. This is possible when the information flow is standardized, and the database centralized.
- The accounting department supports strategies' and operations' decision making.
- In the organization there are clear rules and responsibilities.
- Employees are divided in teams based on processes. Resources are optimally allocated to each process.
- Processes and systems allow also outsourcing. (Lahti & Salminen 2014, 210.)

Full automation will take place when vouchers' information will be completely digital, all the vouchers are created and transferred in digital form, legislation rules will be implemented in the accounting software, vouchers and accounting processes will be standardized and finally rules of the specific customers will also be implemented in the accounting software. (Aho 2019, 18.)

5 PAST VS MODERN ACCOUNTING ACTIVITIES

As already anticipated, accounting activities have changed considerably, especially in larger companies, due to the intervention of technology in the various phases of the accounting processes. In this segment will be compared how accounting was before the advent of technology and how it is now, in order to comprehend also the change of the accountant's role.

At the beginning of 2000, in Finland, customers of accounting agencies delivered all their transaction papers to the accountant who then transferred the information in the accounting system. The work was mostly paper-based, and it was easy to lose or damage the documents because they were handled by several people and stored in physical folders. Being the amount of paper documents substantial, it was hard to find missing papers. The information was then transferred in the accounting system and often included typing errors; alerted by the system, accountants had to correct them. Once all the accounting information was correctly transferred to the system, the accountant sent the tax declaration to the tax office via mail. After the period end adjustments, the financial statements were ready. This was the broad picture of the accountant's job twenty years ago. (Aho 2019, 13-14.)

If we consider accounting activities in large companies at the beginning of 2000, the processes were similar to the accounting agencies' ones, with some differences. First, large companies have usually several different processes within the accounting department, such as accounts payable, receivable, fixed assets accounting and payroll. (Lahti & Salminen 2014, 16-17) Secondly, the accountants of large companies handle just the accounting activities relative to their company. They do not need to look for new clients, to retain clients, to sell anything, consequently the characteristics required from accountants of large companies are different.

The amount of information that has to be processed is also different; large companies have large amounts of documents and often recurring, while accounting agencies have a multitude of customers, usually sole traders, partnerships and small companies with smaller amounts per each customer. A consequence of this aspect is that accountants of accounting agencies are responsible for the whole accounting process, from the transcription in the accounting system of the documents received from the customer to the production of the financial statements and tax declaration, while in large companies accountants are more specialized in one specific process (Aho 2019, 13-17).

For instance, in the accounting department of large companies there are usually bookkeepers and accountants; bookkeepers are responsible for registering accounts payable and receivable, payroll and travel expenses (Bragg 2012, 50-52; Alanis Business Academy 2016, cited 20.4.2020). Once the information is in the accounting system, accountants periodize transactions, control and produce financial statements (Tomperi 2020, cited 20.4.2020).

In accounting agencies accountants usually deal with customers who have little or no knowledge about accounting and finance, therefore they might need support in understanding their economical performances from the financial statements, in addition to receiving updates about new regulations and laws affecting their business (Aho 2019, 19-21). On the other hand, because of the structure of large corporations, controllers and managers understand the information produced by the accounting department and consequently there is not much need of explaining the values written in financial statements (Rantanen, interview 15.5.2020).

As far as past accounting processes in corporations are concerned, the main difference from accounting agencies' processes is how the information is received and transferred to the accounting system. In fact, when sole traders, for instance, receive or send an invoice, they are directly involved with it, they handle it personally and then they send it to the accounting agency to register it in the system (Aho 2019, 13-14). The structure of corporations has usually different layers, employees are involved just in specific tasks, managers control departments and team leaders their teams. Because of this separation of responsibilities, employees are supervised by team leaders and managers; consequently, when someone purchases something, it has to be accepted by the superior, causing a longer circulation of the purchasing invoices (Lahti & Salminen 2014, 52-57). In addition, the amount of purchasing invoices is extremely high in large corporations, and they often need to be controlled and solved if any issue arises. This solving process takes time because often it has to be contacted the sender to solve the problem and for these reasons accounts payable function is the one that requires the most labour force. (Bragg 2012, 51.)

Accounts payable clerks have to match three different documents from three different sources: invoice from the supplier, purchase order from the company's purchasing department and the receipt from the receiving department. If done manually, this process is highly time consuming also because of the huge amount of bills to be handled and registered. For this reason, accounts payable functions can be easily improved in efficiency by technology and automation. (Bragg 2010, 19.)

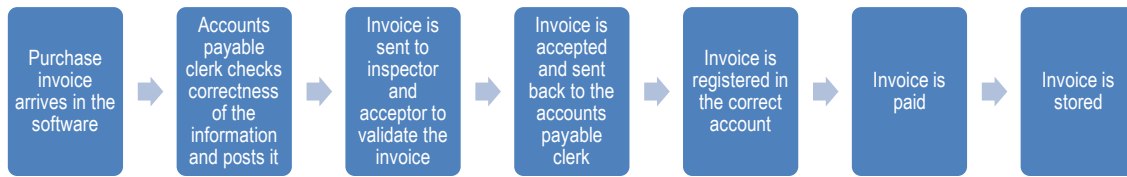


FIGURE 9. Accounts payable process in practice (Based on Lahti & Salminen 2014, 57)

Figure 9 shows the main processes of accounts payable in a computer-based system, and to highlight the advantages of it, it will be briefly compared with the paper-based system's ones. When invoices were paper-based the steps were the followings:

1. Paper invoice is received
2. The invoice is sent to the inspector
3. Inspector accepts and confirms the invoice by marking the confirmation on the paper
4. Inspector sends the paper to the invoice's acceptor
5. Acceptor accepts and confirms the invoice by marking the confirmation on the paper
6. Acceptor sends the invoice to the accounts payable department
7. Accounts payable clerk posts manually the invoice in the account
8. Accounts payable clerk stores the invoice in a physical folder
9. The invoices are collected in a payment data folder and transferred to the bank. (Lahti & Salminen 2014, 53-54.)

This process is slow because it has to go through many people; the document can be lost or damaged, there are costs related to physical storage and the scalability is low. The invoices are also less accessible because they are stored in physical folders, which contain many other documents. (ibid.)

The electronic accounts payable process improves the invoice's circulation, its handling and its control. The information in the invoice is automatically coded by the software and it is not necessary to move all the information manually. The invoices arrive directly in the software where accountants can handle it directly. The steps are the followings:

1. The invoice arrives in the software, where its information is recognised and saved automatically
2. The invoice is posted

3. The invoice is sent through the software to the inspector and acceptor who confirm the validity of the invoice
4. The invoice is automatically registered into the account
5. The invoices are collected in a payment file and transferred to the bank. (Lahti & Salminen 2014, 54-55.)

Now all the information is stored in databases, it is easily accessible also for several users at the same time and scalable on a greater volume (Bragg 2010, 36-38). Still, there are ways of enhancing the efficiency, for instance exploiting automation. The role of accounts payable specialist will be more a supervisor of the automatic transactions to make sure that everything proceeds right; IT knowledge is fundamental to deal with problems arising from the computer system. (ibid., 52.)

As for accounts payable, also accounts receivable are moving always more towards a digital form of billing and invoicing. Compared to paper bills, digital ones can be sent faster, they reach the client easier because they cannot be lost during the delivery, it is cheaper, and it is easier to control. The bill is then ready to be registered from the accounting database. (ibid., 71-72.)

With the advent of digitalization is evident the enhanced efficiency in the overall accounting process. The accounting information goes fast and efficiently through bookkeepers and it is ready for accountants' use.

Accountants get the information from bookkeepers' activity, memo vouchers and business activity. In digital accounting, the majority of information comes automatically from the bookkeepers' activity, and therefore the remaining tasks for accountants are to make sure all the information is transferred correctly from the input source, which is the bookkeepers' activity, to the general ledger, to analyse the whole data in order to identify possible errors, to solve discrepancies and to periodize the information. Accountants also control and decide the parameters and codes that need to be applied to the transactions, which determines the type of allocation wanted; this requires a deep understanding of the business, and it is an important aspect that accountants should possess. (Lahti & Salminen 150-153.)

In paper-based accounting systems, memo vouchers were manually recorded in the general ledger by accountants. Detailed allocation methods caused a great amount of manual work needed to register the periodization of each transaction. Computer-based systems allow the automation of

this process, which turns into time saved for more important activities. It is common to periodize transactions using Excel, and nowadays there are software programs able to read the information and directly transfer it to the general ledger. All the recurring registrations which already are in the program can be automated, saving accountants' time. Another activity that used to be highly laborious is the currency translation adjustment. In fact, when this process was completely manual, accountants had to write down the expected payment and the actual payment, the dates and the currency exchange rate of each date; from this information they were able to calculate currency translation adjustments. Luckily, this process can be completely automated nowadays. (Lahti & Salminen 159-160.)

Period end closing activities that accountants perform at the end of each month include the calculation and registration of depreciation, posting of payroll and billing documents, interest periodization, periodization of transactions, reconciliation of inventory discrepancies, maintenance of exchange rates, verification of balance audit trail and the comparison of the values presented in the current income statement with previous ones to identify gross mistakes. Maintenance of exchange rates and periodization activities were performed manually with the help of memo vouchers, while nowadays these can be automated. (ibid., 159-165.)

It is evident that many activities have changed, others have disappeared, and overall routine activities have decreased substantially, leaving more time for controlling and analysing tasks. This makes possible to produce the financial statements within the tight deadlines that current companies, especially the largest ones, have to respect. (ibid.)

6 ACCOUNTANT'S ROLE

Digitalization and automation change roles and requirements for employees. Jobs that used to focus on recording information are changing towards process controlling tasks. Accountants' role is going towards a more complex and dynamic job where they not only will provide consultancy and financial guidance services, but also risk, management and transactions advisory for instance. Therefore, they will move from a strictly routinely and manual job to a more human and business-centred advisory service. Of course, this will require a wider knowledge and background for accountants in business and accounting terms, in addition to a deeper understanding about their clients' companies. (Park 2011, 16; Metsä-Tökilä 2019, 36-38.) Other important skills that accountants should focus on are data analytics, data visualization and strategic management (Thomson 2018, 8).

It is of fundamental importance for accountants to preserve their specific advantage over technology. Two important functions that will be hard to automate are problem-driven analyses and exploratory analyses. The first requires the ability of understanding the company's fundamentals and financial data in order to give correct financial advices, while the second exploits big data to identify trends, patterns and relationships among the high volumes of data. In this case, accountants cover the role of interpreters of the mass of data. (Richins, Stapleton, Stratopoulos, & Wong 2017, 64-65.)

According to Pomeranz and Gale (1980, 17-18), accountants will support companies even more in the strategic planning, understanding about investments, mergers and acquisitions and other financial information. In addition, accountants can support in forecasting cash flow and returns on the investments, producing understandable information to the management that should be then able to make decisions. It would be a sort of translation from numbers to common language. By understanding all the numbers, accountants can support the company also pointing out possible financial weaknesses that should be fixed and possibly provide alternatives. Of course, it is needed a deep knowledge and understanding of the company in order to provide the best suggestions in line with the goals, objectives, purposes and strategies of the company. (ibid.)

The idea of the accountant who mainly records transactions and performs routine activities is obsolete also according to Bragg (2012, 2-4), who identifies in information technology its reason. If

traditionally accountants' main tasks were accounts payable, accounts receivable, asset transaction and debt transaction, nowadays they spend less time in these activities and they are required to execute a list of other activities that were not asked before.

Cost and margin analysis and target costing are functions always more fundamental for companies, in an era where competition over prices is hard. Changes in regulations and standards have to be updated in the systems. Globalisation is great for companies because they can increase sales and revenues, but international transactions create also challenges for accountants and demand additional activities such as currency exchanges. Mergers and acquisitions are also quite common among large corporations, and these require high levels of experience, being highly complex. Corporations have also subsidiaries, and accountants need to coordinate and consolidate the accounting information of those subsidiaries. (Bragg 2012, 2-4) Accountants also take part in the selection, implementation and maintenance process of accounting systems, because engineers who develop those need the consultancy of accountants, who are the end users of the mentioned technologies (Moll & Yigitbasioglu 2019, 16). Analysing this trend of moving from routine activities and large amount of easy manual transactions to more specific and challenging tasks, Bragg (2012, 2-4) believes that the activities performed by accountants will be always more complex and will require more skills.

Given the integrated systems among different departments, changes in other departments affect directly also accounting functions. For this reason, accountants need to be in contact more than before with other departments in order to adjust their activities based on changes in strategies and operations. (Bragg 2012., 5-6.)

As stated by Aho (2019, 107-110), also Bragg (2012, 6) shared the idea that accountants are asked to be more extroverted than before because they need to interact more with colleagues and other departments; it is not possible anymore to process just transactions in its own corner without interacting with other people.

The role of accountants is also to be a fiduciary mediator between company and investors, who demand adequate and reliable accounting information. The responsibility of accountants is to protect investors by providing fair information. Integrity of the information provided helps investors in analysing companies and forecasting their future financial performances, as it is suggested by Biagioni (1975, 75).

The accountants' role in digital financial management is the most important because of its directive and controlling nature, affirm Lahti and Salminen (2014, 153). In fact, if the accounting processes are planned and executed smartly and smoothly, the whole financial management will benefit from it in terms of efficiency, validity and quality. The accountant's role is also more IT and process centred as it has to understand the information flow, from sales, purchases and inventory. IT knowledge is important also for possible AI training tasks, because AI needs to be trained by humans with tasks that it is wanted to automate (Moll & Yigitbasioglu 2019, 9).

Aho (2019, 24-27) supports the idea that accountants are more going towards a position of consulting, information analysis and reporting to managers, rather than operatively performing accounting or bookkeeping activities. Customer service is going to be, and for many accounting agencies it is already, one of the main tasks for accountants. It is important to be active and give relevant information to the customer, because often the customer might not even know what he needs to know, neither what he needs to ask (Aho 2019, 19).

Aho (2019, 26-27) expects two possible scenarios for the accountants' role in ten years from now: the first is consultancy and the other is process manager. As consultants, accountants need to have strong problem solving and interaction skills in order to support their clients and being able to answer all their questions. As process managers, accountants make sure that all the processes run smoothly, update the programs and correct possible errors. Having all the accounting process automated, each accountant will have more customers. The challenge will be to be able to provide one-to-one support to each customer, because one of the most important elements for an accountant is to know well the customer, its business strategy and structure.

Especially in the accounting agencies context, accountants are moving towards a consulting role. Consultants need to have knowledge about their field, and this knowledge is available for everyone interested in studying and applying it. The difference is made by the personality of each consultant. Consultants can make the difference with their attitude, being proactive, interactive, problem solver, creative, ready to learn new things, open minded, motivated, and with both organizational and managerial skills. (Aho 2019, 107-110.) Another important characteristic consultants must have is the ability of listening their customers and making sure the problem is correctly understood, getting signals also from non-verbal communication. Be open, honest, value the customer, respect the timetable and be understandable. (ibid., 149-152.)

The accountant's job in 2025 from Aho's (2019, 279-284) perspective will look like this:

The accountant will have deep knowledge about accounting, regulations and his customers' business in order to benefit the most from automated accounting functions. Accountants will have many meetings and consultancy tasks, in addition to checking that the automated information is working smoothly and correcting possible errors. He checks regularly customers' financial information and calls customers if there is anything to inform about their financial situation. However, they keep regular contact with all the customers via email or phone call. Accountants will have training sessions to update their skills and adapt to changes and this will be crucial in order to avoid sudden unexpected changes being unprepared.

7 ABOUT KOJAMO

Kojamo is a Finnish company involved in the rental housing business that manages more than 35.000 apartments all around Finland. Founded in 1969 as Valtakunnallinen vuokratulo-osuuskunta (VVO), the company has helped thousands of families in the migration from the countryside to the city by building several new habitable buildings in the major Finnish cities, especially in Helsinki area. VVO Group Oyj changed its name in Kojamo Oyj in 2017, when the company decided to strategically turn into a housing investment company; the transformation included the public listing on the Nasdaq Helsinki stock exchange one year later. Since then, the company increased its investments becoming the largest private housing investment company based on fair value of the investment property, and it is still increasing its portfolio to meet its goal of 38000 apartments by 2021. (Kojamo 2020a, cited 22.5.2020.)

Kojamo has always been a real frontrunner in its business from several perspectives; operationally, strategically and also technologically. In fact, thanks to its ability to keep up with the times and to make sound investments, Kojamo is now the biggest private residential real estate company in Finland (ibid.). An example of Kojamo's versatility and ability to keep up with the times, or even more, being a real frontrunner, is shown by the capacity of identifying the right trends before others and being able to create added value on that. Urbanisation trend has come to Finland later than in the majority of other European countries for several demographical and traditional reasons. Now, it is always more topical among the new generation, and Kojamo has been able to secure for itself thousands of apartments in the best neighbourhoods of the main cities already decades ago, and now they are expanding even more their real estate portfolio buying and constructing new apartments in locations where in future demand will be high. (Kojamo 2020c, cited 22.5.2020.)

Another example of finding the right trends is sustainability. This has been a popular trend for a long time, but in the recent years it has grown exponentially. Kojamo started building eco-friendly offices almost 20 years ago, and now all its offices are recognised and certified by WWF Green Office, which is an environmental programme that focuses on environmental sustainability of Finnish offices and it officially recognises green offices. (Kojamo 2020b, cited 21.5.2020.)

Kojamo is more known by the public as Lumo, its housing brand. Customers who live in Lumo apartments have several services available through a digital platform, among others car sharing,

customer service and disposal service. This is another practical example of Kojamo being a frontrunner in its business. High quality customer service is one of the key elements for Kojamo in terms of competitiveness, and it is achieved thanks to professional employees and the implementation of digital services. (Kojamo 2020d, cited 22.5.2020.)

7.1 Kojamo's organizational structure

The organizational structure of Kojamo, showed in Figure 10, can be described as a functional structure. The structure is not complete, but it focuses on pointing out the position of the accounting team in the organization.

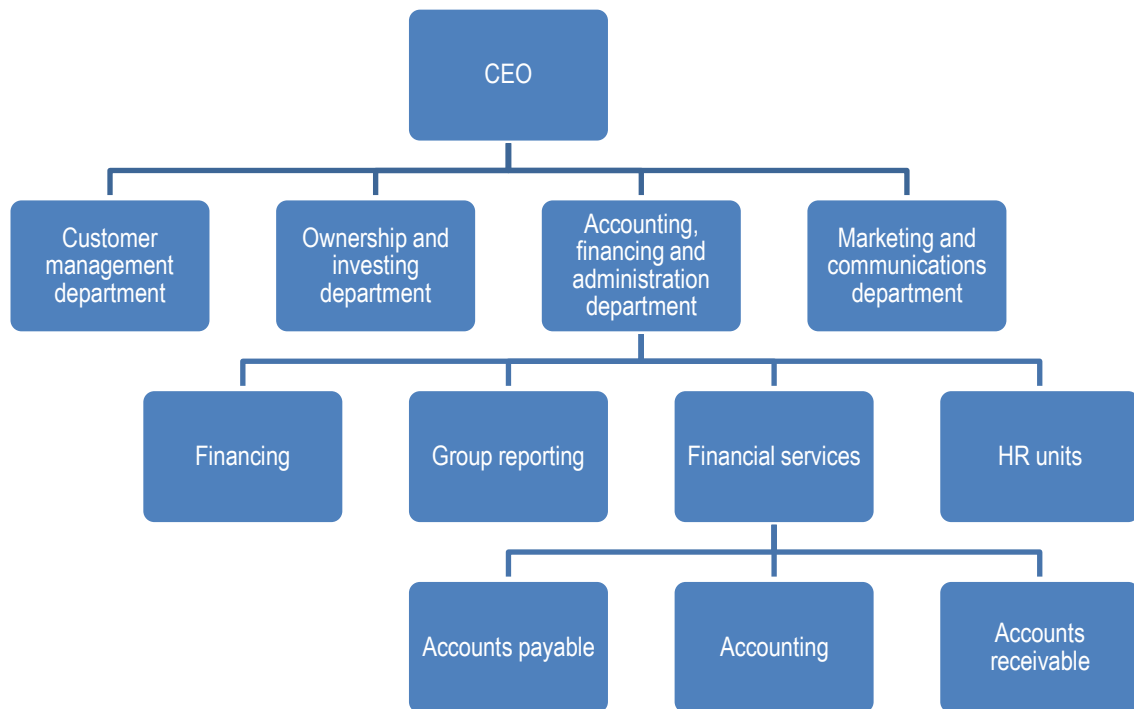


FIGURE 10. Kojamo's organizational structure

At Kojamo, the accounting team is part of the financial services in the finance department. The accounting team has its team leader, and a controller manages the different teams within the financial services: accounts payable, accounting and accounts receivable team. (Lummelahti, interview 6.3.2020.)

7.2 Kojamo's accounting cycle

As anticipated in the previous section, Kojamo's financial services department includes three teams: accounts payable, accounts receivable and accounting team. The first is responsible for recording the expenses, the second for recording revenues and the third puts all the information together to produce the financial statements. (Lummelahti, interview 6.3.2020.)

Figure 11 shows the different specific programs each team utilises. Accounts payable clerks insert the data through Basware P2P, which is a Finnish Source to Pay service provider that allows a high level of automation (Basware 2020, cited 25.5.2020). Accounts receivable clerks utilise VaSu, which is a software developed by Kojamo to control and manage rental payments. Accountants use SAP, the most known ERP system worldwide (SAP 2019, cited 20.5.2020), Cognos Disclosure Management, which is used for financial statement reporting (Lummelahti, interview 6.3.2020) and the last software program in use is Opus Capita, a cloud-based solution for cash management (OpusCapita 2020, cited 25.5.2020). All the information processed in these programs is supported by the database, which is an important source of information that also receives data from the accounting programs (Lummelahti, interview 6.3.2020).

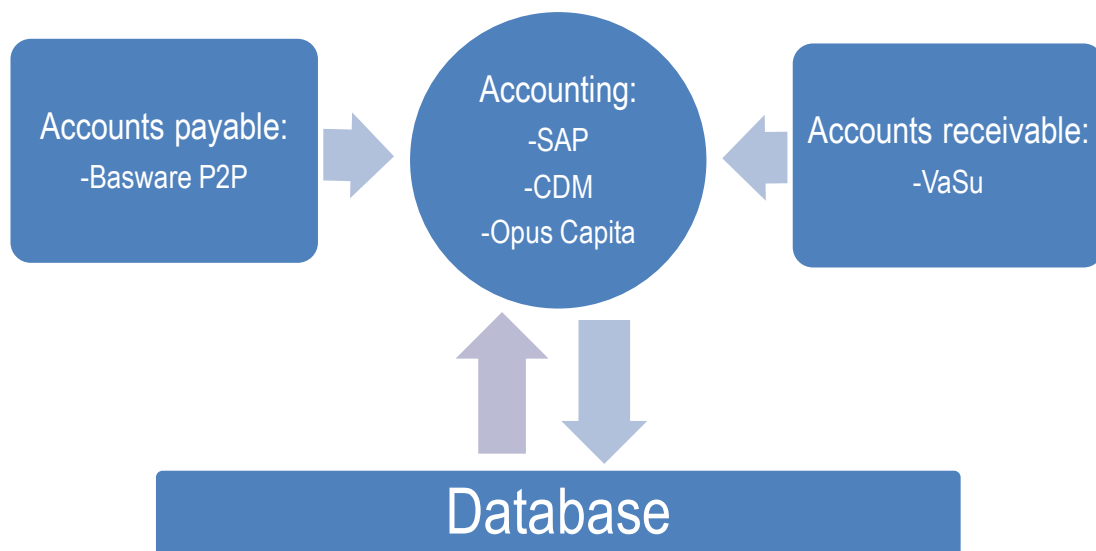


FIGURE 11. Software programs used in Kojamo's accounting department

The processes of each team have changed during the 51 years of Kojamo history, but the pace of the evolution has greatly increased since the advent of information technology, about twenty years ago. The major aspect that affected the processes has been moving from manual and paper-based activities to more automated and digital ones. This, of course, enhanced the efficiency of each function, increasing the speed, decreasing errors and supporting accountants and bookkeepers in their daily routine. (Pulkkinen, interview 6.3.2020; Valge, e-mail message 5.4.2020.)

7.3 Development of accounting activities

To understand about the accounting activities at Kojamo, I interviewed two accountants and the finance controller working for the company. The interviews helped me to reconstruct the history of the financial services department and more specifically the development of the accounting activities within the company. Pulkkinen, one of Kojamo's accountants, and Valge, the current team leader in the accounting team, are the accountants with the longest working experience at Kojamo, and they both provided interesting insights about the changes in Kojamo's accounting team. They were not able to give more information about accounting processes at Kojamo before they moved in, but still they took actively part in the changes of the accounting activities in the last 17 years in the company. However, thanks to Pulkkinen's testimony who had been working in the accounting field since the mid-1980s, we can assume that before the advent of information technology at Kojamo all the accounting activities were completely manual and paper based.

So, the first direct testimony is given by Valge (e-mail message 5.4.2020), who affirmed that when she started working in Kojamo's financial services department in 2003, the processes were mostly paper-based. When paper bills arrived, they received the entry stamp, were sent to the property manager for acceptance and then arrived at her department ready to be registered and processed. The bills were manually posted and the information input in the banking system, from where they transferred the information in the accounting system. Then, accountants' main responsibilities were to check payroll and bank statement reconciliations, calculate the tax amounts for each accounting period and the periodization of the transactions for the correct accounting period. Back in 2003, the periodization was manually done for each subsidiary and parent company.

Then, in 2006 SAP came into use and it highly affected the efficiency of the processes because it made possible to take information directly from an electronic database and it improved also the way of transferring the information; in fact, when accounts payable clerks registered the information in the accounting system, it was automatically available for accountants' use. Since then, the processes remained almost the same in terms of activities to be performed, but the difference was in the gradual implementation of automation and digitalization. In fact, nowadays as in 2006, accounts payable and accounts receivable clerks register the invoices in the accounting system and this information is directly available in SAP for accountants. Accountants perform the same activities of checking payrolls and bank reconciliations, calculate tax amounts and periodize transactions, after which group accountants take the information provided by each accountant and create the corporation's financial statement. (Pulkkinen, interview 6.3.2020.)

In 2006, the majority of bills were paper based and just few years ago the company managed to move towards electronic invoices; now the 97% of bills are in electronic form, affirmed Valge (e-mail message 5.4.2020). The processes were slow and manual; the accounts payable clerks had to insert manually the information of each invoice in the accounting system, while now it is highly automated. For instance, when a property manager orders a service or replacement parts through Tampuuri, which is an ERP software used to buy services or replacement pieces from other businesses (Visma 2019, cited 25.5.2020), he allocates the expense during the purchasing process and the information of the allocation goes automatically to Basware P2P, which is the new system that Kojamo's accounts payable team has implemented last year. This speeds up the accounts payable process, which is the most time and labour consuming accounting activity for companies because of the number of invoices that have to be processed and solved. The process is faster because accountants are not anymore required to manually allocate each expense, and they do not have to send the allocated expense to the manager to make him check if the allocation is correct, but managers directly allocate themselves the invoice, resulting in a leaner process. (Lummelahti, interview 6.3.2020.) Moreover, often managers have a better understanding about the purpose of their purchases than accounts payable clerks do, so they are the ones who can be more precise in the allocation of the expenses. The automation of payable invoices is a huge step forward in the overall efficiency of the accounting department because it eliminates the useless steps of manually inserting the information by accounts payable clerks and waiting for the manager to control the allocation and possibly correct it.

When it comes to more accounting related activities, periodization was still manual five years ago, as explained by Pulkkinen (interview 6.3.2020). Even though they use the same program, SAP, they did not take fully advantage of it five years ago. They had to take the data from SAP, move it to Excel, and periodize it there. Now they are able to have a more automated periodization process because the data comes directly from their database, and this enables to perform mass periodization of a large amount of information at the same time.

Accountants still process data, periodize transactions, prepare tax declarations and perform more or less the same activities of 15 years ago, just in a different manner, with less manual work and more automated processes (Valge, e-mail message 5.4.2020). Automation can certainly help and accelerate accountants' activities but cannot totally replace humans in all tasks because human presence is still needed to control that everything is correct applying his knowledge and problem-solving skills based on rational experience. Even though 20 years ago technology was not that developed, accountants' schedule was looser because the accounting period ended the 25th of the following month and it was not required a report for each month; nowadays the period closes on the 5th working day after the month ended and the report is required for each month (ibid.). So, the help from software programs has been balanced with tighter deadlines, which caused more pressure and hurry than before to meet deadlines in time. This deadline tightening concerns more large corporations than small sized companies affirmed Rantanen (interview 15.5.2020), who has spoken with colleagues working as accountants for smaller companies.

Now the processes are digital and largely automated, therefore routine activities have decreased while controlling and analysing tasks increased. As expressed by Valge (e-mail message 5.4.2020) this change requires a different approach for accountants in their job. Easy tasks are disappearing and given always more to IT programs to be automated, and consequently accountants will execute increasingly more challenging tasks (Bragg 2012, 2-4). Technology had a positive impact on accountants' activities because it decreased the amount of human related errors such as typing or copying errors, accelerated and supported accountants automating several processes and freed time exploitable for more important activities.

8 FINDINGS

As far as interviews are concerned, I started interviewing Kojamo's accountants and finance controller in order to develop an understanding about Kojamo's past and current accounting activities and how has accountant's role changed over time. By comparing their answers with the ones given by accountants working for more developed companies in accounting terms, I was also able to check if their future expectations are in line with others' experiences and expectations.

The decision for the companies to interview was based on the level of development of their accounting processes. I decided to contact companies with advanced accounting systems in terms of automation, AI and robotization because their current stage might be the future stage of Kojamo. Hence, analysing their development over the years and their current situation can present possible paths that also Kojamo might pass through in the following years.

Coherently with what I explained above, I contacted the largest Finnish accounting agencies because they have large capitals to invest and they also need to have as advanced systems as possible in order to be competitive. Many agencies did not answer or did not accept to release an interview for this thesis also because of the exceptional situation caused by Coronavirus; in fact, several agencies faced issues, delays and tighter schedules due to the current unexpected situation. Just one accounting agency accepted the proposal and I managed to interview two accountants that asked to stay anonymous, therefore they will be referred as Accountant 1 and Accountant 2 of the Company X.

I also decided to contact the largest Finnish corporations to understand more about their accounting activities, because the purpose of this thesis is to support Kojamo in analysing the accountants' role within corporations. This thesis can be useful also for accounting agencies, but the commissioner is Kojamo and the focus is on corporations' accounting department. I contacted the ten largest Finnish companies, but I received no answer from them. I also contacted Posti Group because Valge (e-mail message 5.4.2020) confessed me that Posti Group has one of the most advanced accounting systems, and for this reason I decided to contact the company to understand how their processes have changed and what are accountants' tasks in developed corporations from the accounting viewpoint. I received affirmative answer from Posti Group's R2R Senior Specialist, who also worked as chief accountant for Nokia and Microsoft previously (Rantanen,

interview 15.5.2020). Her answers were highly valuable for this thesis' purposes because she has gone through innovation at the highest levels in the most advanced Finnish corporations. The interview with Rantanen was also interesting because she affirmed that she was surprised by the many similarities she found in the accounting activities and structure among large companies such as Nokia, Posti and Microsoft. Her opinions will be considered and deeply analysed in order to give Kojamo the best idea about their possible future changes and the new role for their accountants. At this point I received similar answers from all the interviewees, which were also in line with literature's content, and therefore I decided that I reached the saturation point, in which new interviews would not add relevant information for this thesis' purposes.

To sum up, the interviews were conducted with the following people:

- Marjo Lummelahdi, finance controller, Kojamo Oyj
- Pirjo Pulkkinen, accountant, Kojamo Oyj
- Diana Valge, team leader of accounting team, Kojamo Oyj
- Accountant 1, service supervisor, Company X
- Accountant 2, service manager, Company X
- Kirsti Rantanen, R2R Senior Specialist, Posti Group Oyj.

From the interviews emerged that the most evident and practical changes have been the shift from paper-based documents to digital ones, in addition to the consequent shift from manual to more automated activities. These aspects have been discussed by each one of the interviewees. Another trend that has been highlighted by the interviewed accountants has been the increasing amount of companies each accountant is responsible for. This was a common comment both for accountants in accounting agencies and corporations. Accounting agencies because they have increasing amounts of clients and therefore increasing number of companies to take care of, and corporations because they have usually multiple subsidiaries registered, each one with its own accounting information.

Talking about the factors that affected mostly accountants' role, each interviewee cited technology and automation, while Rantanen (interview 15.5.2020) and Accountant 2 (interview 26.3.2020) also added AI and robotization because they had direct experience with those technologies in their companies. AI and robotization are fairly new technologies in the accounting field and they are expected to automate always more the accounting activities. However, Valge (e-mail message

5.4.2020) believes that Kojamo does not need to implement AI and robotization because of the relative low amount of transactions to be recorded in the accounting system. Accounting agencies and corporations such as Posti Group or Nokia might also find easier to implement AI and robotization rather than Kojamo because of easier accounting processes; in fact, as expressed by Lummelahti (interview 6.3.2020) Kojamo's accounting department has to process also easement bills which are hard to handle for accounting software programs.

Not always is needed a new system or program to increase the efficiency of accounting activities. As Pulkkinen (interview 6.3.2020) explained during the interview, it is important to take full advantage of the programs and tools in use; for instance, SAP has been in use for the last 15 years at Kojamo, but just recently databases have been exploited to automate the periodization. The same happened for emails, as reminded by Accountant 2 (interview 26.3.2020), because even though everyone has been sending emails for the last 20 years, just during the last years they have been used also to send invoices. So, before starting to invest in other solutions, it is worth to get a deep understanding about the systems in use and how those could be utilized more efficiently.

Another tip to improve the efficiency in the accounting department is to apply the Lean method because it helps in the identification of wastes in the productivity chain and consequently it consents their elimination, as suggested by Rantanen (interview 15.5.2020). In the Lean method are analysed the activities of each person and system in a specific process, that can be for instance the period end process. From this analysis each employee understands the whole process and his part in it; in addition, employees get to know where they receive the information from and who will be the next person to handle the information produced. In this way everyone understands more about their deadlines and the needs of producing the information in a certain way, which will help the job of the following user. Other information that can be disclosed using this method are the identification of useless activities and the schedule of each employee. This is an important information for the manager or controller because it allows to increase the productivity of each employee by cutting time wastes. (ibid.)

Accountant 1 (interview 26.3.2020) shared her idea of the perfect accounting process. Nowadays most of the accounting activities are based on an ERP system, thus a perfect accounting process requires a perfect ERP system. Accountants from both Company X and Kojamo affirmed that SAP is stiff and hard to use for accountants because it has been produced too much from an engineering point of view, rather than the end user's one. A perfect ERP system should be user friendly, possibly

error free and able to integrate accounting activities with all the other departments' activities. Currently, companies use also other programs in addition to ERP systems, and the perfect ERPS should be a mix of all the best features present in the existing accounting software programs. If one day the production of such a system will be possible, the accountants' job will be easier and more efficient.

The majority of the interviewees stated that accountants will be required strong IT skills, while in Rantanen's opinion basic IT knowledge is enough, probably because the systems will always be more user friendly. If we consider the evolution of computers, much of the things we do now could be done also 15 years ago, with the difference that the interface is more user friendly. IT skills are a basic required for any accountant, since most activities are executed electronically also in smaller companies. (Rantanen, interview 15.5.2020)

As all the other accountants interviewed for this thesis, also Rantanen (interview 15.5.2020) affirmed that technology has a positive impact on accounting, but differently than the others, she supported the idea that the need for accountants will diminish because of automation, AI and robotization. She specified that the first employees that will be highly affected and might lose their job because of automation's progress within the accounting department of corporations will be bookkeepers such as accounts payable, receivable and travel expenses clerks (ibid.). The reason for this statement is that these employees have highly routinely activities which are easy to automate. On the other hand, accountants and chief accountants will see a slower impact in their activities because they also perform activities where human subjectivity is needed. In fact, the final analysis of the reports has to be checked by humans to solve discrepancies and ambiguous postings.

9 CONCLUSION

As technology is progressing always more with automation, AI and robotization, accountants will have to focus more on activities where human subjectivity and empathy make the difference. In fact, technology can affect all those activities characterized by objectivity and routines that can be recognizable and processable by computers.

The example given by one interviewee (Accountant 2, interview 26.3.2020) provides an interesting point of reflection about the real potential of technology: if we think how mobile phones have developed in the last ten years, it is quite impressive the difference, and people probably did not expect to have this high level of technology already now. The same could happen for accounting activities, because as stated by Aho (2019, 17-18), there has not been a high interest in improving accounting activities since they do not produce income, if we do not consider accounting agencies. However, the potential for technological improvements in the accounting field is huge because of the highly routine and number-based activities. What technology can do nowadays in fields such as healthcare, logistics and almost any other area, is much more demanding and complex than a technology required for the accounting field (ibid.). For this reason, when companies will start being really interested in improving the efficiency of their accounting processes, when they will decide to invest heavy for a benefit in the long term, automation will improve exponentially the efficiency of the accounting activities.

If a complete automation of the accounting processes will be possible one day, it will require important investments, affordable just for the biggest corporations and accounting agencies. These companies will be the ones that also will need the most the highest automation level possible for scalability purposes. In fact, one of the main advantages of machines is capacity; human being is greatly limited in the ability of performing several tasks at a fast pace without committing errors, while machines can take advantage of their excellent computing capacity. As a consequence, when the volume of data increases, the computer can handle in the same time as before all the new data, while humans would need more working hours or more employees to handle the volume in excess.

As agreed by all the interviewees, the biggest limitations for the complete automation of the accounting processes are mainly the tax and period end closing activities, which are thought to be activities where human capabilities are essential in order to ensure their soundness. Apart from

those activities, in the most developed Finnish accounting companies, much of the data is already automated and the job of bookkeepers is ending soon, if it is not ended already. Accounts payable and receivable clerks, who mainly have bookkeeping responsibilities, are consuming always more time by solving invoice related issues, solving discrepancies and being in contact with stakeholders such as clients and suppliers (Valge, e-mail message 5.4.2020). This shift from manual bookkeeping tasks to problem solving tasks will decrease the need for bookkeepers because they already had previously also problem-solving tasks, but those were just a small part of their routines.

By eliminating the most time-consuming activity, that is manual bookkeeping, each bookkeeper will have more free time which will be filled just if they have more invoices that require problem solving tasks. If one day all the invoices will run smoothly, without errors and in a completely automated system implemented by all the stakeholders, the bookkeeper job will end, while the accountant will still have chances of continuing its activities because those are more technical and need a little bit more the human's specific abilities. The accountant's job will survive also because it can develop expertise and consultancy skills which are important and hard to replace by mere machines, as affirmed by Aho (2019, 39).

Based on the interviews with accountants of companies and accounting agencies, the impression is that they are all on the same wave, they all see the accountant's role going towards a controlling and data analysing position. Also literature supports this idea, adding also consultancy and expertise aspects of the job; hence, as for now, this is what is expected to be the accountant's role in advanced companies during this decade. Of course, smaller companies with smaller volumes of information and without possibilities of large investments might have more traditional activities for accountant's, and therefore the accountant's role is the classic one for them. These companies will have accountants handling manually digital-based invoices, allocating the expenses in the accounts, transferring the data through the different software programs, solving accounts payable and receivable issues and managing period end closing activities.

This thesis is focusing on the advanced companies in accounting terms, but the ideas provided by this paper are meant also for those smaller companies that might develop their accounting activities in the future. With this thesis, those companies can have an idea about where the direction accounting processes are going towards and how the accountant's role will change. This information will help them to be ready when they will upgrade their accounting activities, because they know what will expect them. They do not need to try new paths if they do not want to, but

based on the direct testimonies and insights of the accountants interviewed for this research paper, they can just follow the steps of more advanced successful accounting companies.

9.1 Accountant's role in corporations and accounting agencies

In corporations, accountants are those who have all the expense and revenue information under control, and they know it very well. Managers and controllers have to take care about also other aspects of the company and have other responsibilities. Accountants are important in supporting budgeting and forecasting activities because they directly see all the transactions every day and create the financial statements that summarize all the information they already know. They can easily check the validity of the information, identify possible mistakes and suggest on different accounting topics such as cost management, budgeting and forecasting. (Bragg 2012, 2-4.)

It is clear that in accounting agencies the possible activities for accountants are much wider: in fact, while in corporations there are accountants, controllers, managers and chief financial officer who take part in the accounting and financial decisions, in small companies, partnerships or sole traders they might not have the same expertise in accounting and financial matters. This enables accountants of accounting agencies to provide a more complete service for their clients. If we consider sole traders as example, it does not surprise if they are not able to understand and analyse the financial statements of their business, provided by accounting agencies. Accountants of accounting agencies need also selling skills to get new clients, consulting skills to help their clients understanding their finances and they often perform all the accounting activities required, from the transactions' recording to the production of the financial statements. (Aho, 2019, 63-66.)

Accountants within large corporations work in a totally different environment. They are more specialized in one accounting part, that can be fixed assets accounting, real estate accounting, cost accounting and so on, and bookkeepers perform transactions' recording; there are not accountants who perform the whole accounting process. There is no need of selling an accounting service to clients, because the accountant works just for his company and consulting skills are not needed either, because in the company there are controllers and managers able to understand financial data. Accountants might need to support controllers and managers to look for specific information and to analyse some data, but a consulting service per se is not needed. (Rantanen, interview 15.5.2020.)

Depending on the company and on the responsibilities given to each position, accountants can have larger or smaller range of activities they are responsible for. As example, in certain companies, accountants are required to perform cost and risk management, accounting appraisals, budgeting, forecasting, and so on. In other ones it is enough for accountants to produce financial statements and the other tasks are given partly or completely to controllers, managers or to the chief financial officer (Rantanen, interview 15.5.2020). It all depends on the structure and size of the company.

From my personal point of view it is easier to automate processes for accounting agencies which take care of small businesses, sole traders and partnerships, because the information processed is quite straight forward; on the other hand, large corporations have usually several subsidiary companies and lots of discrepancies in their accounting information, therefore it might be more challenging to develop automated systems that suit to the company's structure. Especially in the context of real estate corporations, accounting is highly complex because of easement agreements, which are properties and lands used by third parties for a specific reason, usually are infrastructures and underground services such as pipelines that cross through properties (Cambridge Business English Dictionary 2020, cited 23.5.2020). As expressed by Lummelahti (interview, 6.3.2020), easement bills are hard to handle because are bills that are split between several companies; popular accounting systems, which are created for accountants and easy to use, are not able to handle that kind of bills. This issue limits the efficient application of automation, and there are two main alternatives: either waiting for an ERP system able to handle automatically easement bills and also able to automate even more the other accounting processes, or change drastically the internal functions to meet better existing ERP systems. The first solution is a matter of time, and at the moment it is an undetermined waiting time, while the second requires a huge effort from the whole company, not only the accounting department.

9.2 Future perspective

The accountant's role highly depends also on the organizational structure, size of the company, resources available in terms of money, time and also the interest of the company in implementing automatic systems, volume of invoices recordable, return on the investment rate calculating all the savings that an automated system would generate for the company and the complexity level of the accounting activities of the specific company. For instance, Kojamo has highly complex accounting

functions that the company's accountants believe cannot be completely automated, while other companies might have processes easier to automate and could reach the total automation in few years. Aho (2019, 17) affirms that there are companies which already have almost completely automated accounting functions, and accountants just have to check the correctness of the information.

An important change in the accountant's role will be witnessed when we consider large companies. Large companies have high volumes of transactions, which is important to handle efficiently with an automated system. These companies will try to have as automated systems as possible in order to enhance efficiency at the highest possible level. This development will affect accountants more than what it does in small and mid-sized companies, where the need of updating systems is not that vital.

The majority of large companies with straight forward accounting activities will be able to reach high levels of automation with the help of AI and robotics. These technologies already permit an automatic analysis of data and identification of possible errors in addition to automating large part of taxation and financial statements' production processes. The costs for developing these technologies are relevant, thus large companies with possibilities of large investments and with high volumes of transactions, might find this investment affordable and profitable in the long term. (Rantanen, interview 15.5.2020.)

The number of bookkeepers will decrease with the increase of automation, to a point where there might not be needed bookkeepers anymore. Jobs as financial assistant will disappear (ibid.) because digital information is easy to handle, store and find, and automation allows accountants to perform more activities, including the ones usually given to financial assistants.

Accountants will have more process controlling and data analysis tasks and will act as information's validator. It will be fundamental for accountants to understand deeply the whole process and at the same time being able to extract specific errors from the whole mass (Valge, e-mail message 5.4.2020). Accountants have to support the finance controller and will also have to cooperate and interact more with other departments as well in order to follow possible changes which might affect also accounting functions, since ERP systems are highly interconnected (Bragg 2012, 5-6).

IT skills will be important for accountants to take active part in the selection, implementation and maintenance process of accounting systems, because accountants have to support engineers to develop the best technologies that fit for their company (Moll & Yigitbasioglu 2019, 16). In case a company utilises AI to improve its processes, IT knowledge is important also for a possible training of AI, because AI needs to be trained by humans with tasks that it is wanted to automate (Moll & Yigitbasioglu 2019, 9).

At Kojamo the accounting activities are hard to completely automate, as stated by its finance controller (Lummelahti, interview 6.3.2020). This helps accountants to maintain a little bit longer some of their accounting activities. Development and changes are expected also at Kojamo, but a complete automation of the accounting processes is not believed to be possible to realize, according to Kojamo's accountants. However, this does not exclude that at some point all the activities could be automated, probably with new technologies that are not available now and that are not expected to be realizable.

At least for now, in 2020, all the accountants interviewed for this thesis agreed on the fact that technology cannot replace completely humans in accounting activities, but it is fundamental to achieve the maximum efficiency. The overall activities are always the same, but those are carried out better and faster with technology. Easiest tasks are disappearing because executable by machines, and accountants will have left just the most difficult ones, where human capabilities are needed. A final check of tax reports and financial statements will always be performed by accountants because human subjectivity can determine aspects and situations that AI cannot detect.

It is not a foreseeable situation, neither for Rantanen who has worked for the most advanced Finnish corporations, but if AI and technology will make possible the automation of period end closing activities and tax reports, at that point accountant's role will be as supervisor of the whole process, correcting errors, assisting AI and focusing more on the interaction with other colleagues and departments. No technology works by itself, it needs people to maintain, update and control it (Valge, e-mail 5.4.2020) and to the extent that financial statements will be required by law, the accountant's job will persist (Lummelahti, interview 6.3.2020).

10 DISCUSSION

The aim of this research paper was to analyse and present the accountant's role in the 2020s, focusing on corporations' financial accountants. The objective was reached by answering to the following two questions:

- What will be the tasks of financial accountants?
- What affects the role of the financial accountant?

The answers to these two questions supported the idea Kojamo's accountants already had, highlighting the importance and development of automation within accounting processes and the consequent data controller and analyser role for accountants. Other aspects arisen from literature and interviews were the importance of active interactivity in the cooperation with finance controller and other departments, the importance of IT skills to support technology and train AI, and understanding of the whole process with the ability of extracting singular errors from the whole mass. In accounting agencies accountants will also be consultants and financial experts, and these roles can be applied to a certain extent also to Kojamo and other corporations as in the interaction with other departments, accountants cover the role of financial experts.

Since Kojamo already had a clear view about the future of accountant's role, which was also supported by accountants working for other companies, the purpose of this thesis was also to provide at least few topics that could attract the interest of Kojamo's accountants for further researches. Examples of these topics can be related to the improvement of accounting activities' efficiency or possible developments of technology in the accounting field.

As a qualitative research, the method applied was the case study method with semi structured interviews, in addition to academic literature as theoretical framework. Semi structured interviews allowed to have quite open conversations with the interviewees and the questions were slightly variable. However, most of the questions were the same, and this allowed to compare the different answers.

I consider reliable the results achieved in this thesis because the sources utilized were up to date and the authors trustworthy. The interviews have been conducted in Finnish and registered on tape

to be translated word by word in English, in the interest of ensuring the correctness of the interviews' content. The original registrations are in author's possession and have been used just for this thesis' purposes.

The interviews with Kojamo's staff were scheduled well in advance. However, we had not enough time for the three interviews and hence the third interviewee answered the questions by email. After the opening seminar I decided to interview also accountants working for accounting agencies and corporations in order to understand how other companies handle their accounting activities and to compare those with Kojamo's ones. I sent more than ten emails and I got four positive answers for possible interviews. Then, restrictions due to the novel Coronavirus were applied by the Finnish government and from those four affirmative answers, two were not available anymore for the interview. Eventually, I have been able to interview two accountants from a quite large accounting agency and Ms Rantanen from Posti Group, who has been really kind in taking time for a video interview despite the difficulties caused by the current situation. Her insights were highly relevant to support the final results because the current accounting activities at Posti might be the future ones at Kojamo, but always considering the additional challenges that real estate corporations face due to easement agreements.

It has been interesting to study the changes affecting the accounting field and I enjoyed interviewing experts of the sector. The interviews had more or less all the same outcomes, which were also in line with academic literature and therefore it was not too challenging to find a unique conclusion. However, personally I believe there might be unexpected changes in the future, considering the unexpressed potential of technology in the accounting field.

During these three months dedicated to the production of this thesis I tested my concentration, dedication, and analysis abilities because it has been a long process that required consistency and hard work to screen the right and useful sources, to collect the relevant information and present it neatly. I also expanded my English vocabulary and learned in depth about accounting activities and the whole process behind the production of financial statements. I am satisfied of the outcome and I believe it can be useful for a variety of companies.

An interesting development of this research can be the analysis of the real potential of accounting systems in terms of automation because it is highly connected with this thesis. I was able to make

considerations just from the accountant's standpoint, but an analysis from the technological point of view could add interesting elements to the results of this thesis.

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