



## Automation of accounting processes: Case study of the companies in Lithuanian

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### Abstract

One of the main conditions of successful business development is the assessment of the relevance of accounting information and the ability to make use of the opportunities it provides. These objectives can be achieved by automated accounting processes that release accounting and management staff from routine work so they can focus on creative processes. The research aims to investigate the level of automation of accounting processes in enterprises. The sample of the survey consisted of enterprises where the kolegija/University of Applied Sciences accounting study programmes students had practiced before; in 2017 – 67 and 2018 – 69. The research method included an analysis of information sources, a questionnaire survey, comparison and critical evaluation. The research results showed that the automation of accounting processes is increasing every year in enterprises.

Keywords: Accountant, accounting, automation, data processing;

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## 1. Introduction

The automation of accounting and other business processes in Western European countries was started a decade ago. Experience can be gained from Scandinavian, British or other countries (Vainoras, 2017). In Lithuania, there is a need now and the automation process is already well underway. Trends in the Lithuanian market show that companies whose future is important to them and they want to remain competitive, must choose the tools to optimise their work processes. It helps to save time and money. It makes work more interesting. Automating monotonous jobs creates better working conditions for employees, increases productivity and speeds up paperwork. It might be difficult to find a company that would deny the benefits of automated processes (Vasonskis, 2016). Corporate executives understand that any innovation in business and its implementation requires additional investment.

The automation process may seem a very expensive service, but calculating how much time and money is spent on repetitive and low-skill jobs makes it a very attractive investment for businesses (Muro et al., 2019). It is essential for every company based on its business to manage processes such as purchasing, sales, services, personnel, personnel, bookkeeping etc. These processes need to be managed quickly, conveniently and logically to satisfy the company's employees and customers, its productivity, profit growth and employee development. It is very important to select areas in the company where automated technology is needed to be applied. Most often they start with the areas where there is a large flow of uniform operations. High-quality accounting requires thorough specialist insight and consistent monitoring of indicators and processes. Training institutions that train professionals also need to respond to the market trends.

Business companies contribute to the training of qualified accountants by enabling students in accounting studies to complete a traineeship. During the internship, students acquire practical, organisational, project and research skills; develop general, special and personal skills; and collect and analyse data needed to solve professional and innovation problems in accounting. When designing and developing a study programme in accounting, it is very important to evaluate what requirements employers currently have for accounting professionals. Therefore, there is regular contact with the social partners and the companies in which the students of the accounting study programme are completing their professional practice. It is very important to apply innovative teaching and learning methods during studies.

Improvement in accounting inevitably involves automation of accounting processes; therefore, the study programme of accounting in educational institutions is being improved and the subject descriptions are being specified. This also affects future professionals' training. Therefore, the automation of accounting processes in the enterprises was analysed as well.

### 1.1. Theoretical background

The ever-increasing need to work more efficiently, the opportunities afforded by technology, and the ever-increasing challenges of the day make us look for tools to streamline and automate accounting processes. External processes can also be an incentive for companies to grow and innovate. For the automation process to be successful, the company must want to change, understand the inefficiency of the current situation, know what kind of result to seek and find motivation (Vasonskis, 2016). Companies that realise the importance of their future choose tools for automating accounting processes (Adamyk et al., 2014; Azmitov & Korabelnikova, 2015; Kokina & Davenport, 2017; Koval, 2019; Morrison, 2019). When developing a plan for all process automation, it is urgent to prioritise which process automation should be undertaken first and, in addition, what benefits the process of optimisation will bring and what stages the automation process will take. The first step is to start with one automation process.

Implementing an information system is a long, not a month or several months, but a year-long low-budget process that implements organisational change in the company (Byrnes et al., 2018; Fernandez & Aman, 2018; Lankutis, 2018; Moffitt et al., 2018; Vasarhelyi et al., 2015), which states that the implementation of an information system comprises nine stages: planning, acquisition, analysis, design, programming, testing, implementation, training and investigation. Each stage is important. During the planning phase, problems and opportunities are identified; results are determined; budget and funding sources are decided upon; and volumes and constraints are identified. During the acquisition phase, preliminary needs are described; information from the market is gathered; a list of suppliers is drawn up; and detailed system requirements are prepared. After interviewing the suppliers and evaluating their tenders, the most suitable tender is selected; the contract is signed with the supplier; and the project is initiated. During the analysis phase, a business performance analysis is conducted to determine how the information system will be used in the business context. At the design stage, a design document is prepared, i.e., user interface, database, technological components and architecture, and interaction with business processes are specified according to the system requirements. In the programming phase, programmers write system code and documentation. Testing assesses the system's compliance with the system requirements for analysis and the final result of the stage is the correction of identified errors. The employment phase involves installing the system into the enterprise IT infrastructure, i.e., hardware configuration and software start-up. During the training phase, the employees of the organisation are trained to use the system properly. The information system will be brought into use during the test phase.

It is very important for a company that wants to start automating processes to have highly qualified employees who are knowledgeable about the organisation's goals and needs and could undertake such activities. One of the most common obstacles companies may have to overcome is employee distrust of technology, system implementation and natural resistance to change. Thus, it requires more interviews, discussions, surveys and training. According to Fernandez and Aman (2018), this should be a carefully prepared, well-designed and comprehensive management plan to help embed the new system and adapt the workforce to the new reorganised task.

Automating monotonous bookkeeping work creates better working conditions; makes professionals feel needed; makes work more interesting; and saves money and time. Processes of standardisation, data integration and digital document processing are key areas for improving accounting that are presently applied by businesses who want to remain competitive in the local and foreign markets. More and more physical documents in companies are being moved to cyberspace and manual data entry is being replaced by automated operations. Another important thing is not to be stagnant, but to constantly improve automated processes. The processes are constantly changing, and these changes should be reflected not only in reality but also in the document management system (DVS). Venčkauskas (2019) states that the concept of processes is inseparable from the concept of continuous improvement. However, the impediment to improvement is process uncertainty. The overall process architecture model helps to effectively solve this difficulty.

The concept of processes has been used in the business language for several decades, and by the end of the 20th century, there was already discussion of reorganisation, decentralisation, centralisation, simplification and transfer of business processes. Recently, the concept of processes has been closely linked to the concepts of continuous improvement, 'slimming down' of processes, management of wastage and similar business applications. It is not just a sequence of actions with efforts that transform an idea into results, i.e., input to the output (Venčkauskas, 2019). Therefore, business process automation has been recognised as an effective method for improving business efficiency and productivity by reducing time and resources (Shi et al., 2008).

Some companies are already installing robots and are aiming to no longer have paper records. According to Degutis (2017), companies integrate several functions in their systems – document management, administration, archiving, payroll, personnel document management – linking them with systems that communicate with each other. It is related to a customer relationship management system. There is no duplication of features within the company. Robots perform programmed operations where logic is required. Instead of a human, they move data from one accounting system to another and perform operations that require a lot of monotonous work.

Commonly, the term ‘robotic process automation’ (RPA) is defined as the configuration of computer software that replaces people completing the task (Zainol et al., 2017). Wirtz et al. (2015) argue that RPA technology has a profound impact not only on the individual but also on the organisation. As a result, there has been a change in the reduction of the workforce, which is reflected in the reduction of the number of employees. Nevertheless, the introduction of new technology into an organisation creates unnecessary competition between humans and robots. While RPA technology can solve human-related problems, such as discipline issues, employee productivity and lack of human resources, such high-level jobs as analytics cannot be fully replaced by robots and can only be performed by humans. Ghasemi et al. (2011) emphasise that RPA helps to shorten the time needed to prepare and present financial information. This system also allows companies to quickly and easily create separate reports for management decisions. Other capabilities of the computerised accounting systems include increased functionality, lower costs, improved accuracy, faster processing and better external reporting. The RPA factors affecting the organisation and its employees are listed in Table 1.

Table 1. Impact of RPA on organisations and employees	
Impact on individuals	<ul style="list-style-type: none"> <li>-Quality and accuracy of work</li> <li>- Saved accounting time</li> <li>- Changing of tasks and roles</li> <li>- Competition fear</li> <li>- Reduced job opportunities</li> </ul>
Impact on organisations	<ul style="list-style-type: none"> <li>- Active planning</li> <li>- Management support</li> <li>- Suitably qualified staff</li> <li>- The need for IT technology and analytical skills</li> <li>- Work at any time</li> <li>- Staff reductions</li> </ul>

Source: Fernandez and Aman (2018).

This shows that the implementation of RPA technologies has a significant impact not only on the organisation's employees and their behaviour but also on the companies themselves. In the context of globalisation processes that are increasingly affecting organisations, as well as the increased responsibility in the accounting world, the accounting profession has an important role to play in IT knowledge. Instead of expecting to use the same tool for the next decade, today's accountants need to be prepared to use new technologies every year. This requires not only a basic understanding of the technologies themselves but also a continuous increase in adaptability. Therefore, the quality of accounting training is a factor that has a direct impact on the success of employees and organisations. Adapting the curriculum in accounting to current changes in the environment is essential for graduates to be of sufficient quality to meet the needs of the industry.

### 1.2. Purpose of the study

The aim of the research is to investigate the level of automation of accounting processes in the enterprises.

The research tasks are as follows:

1. To review the situation of business process automation in Lithuanian companies.
2. To analyse the automation of accounting processes and their influence on the efficiency of activities in the accounting practice bases on students' final professional activity.
3. To discuss the influence of business process automation on the training of accounting specialists.

## 2. Materials and methods

The sample of the survey includes enterprises where the practice is conducted: in 2017 – 67 and 2018 – 69.

The research method used analysis of information sources, a questionnaire survey, comparison and critical evaluation.

## 3. Business process automation in the enterprises

Business companies contribute to the training of qualified accountants. They enable students of the accounting study programme to complete their final professional practice during which graduates become acquainted with the activities of the company and acquire practical skills according to the professional part of the studies. With the widespread adoption of information technology in accounting, it has become necessary to automate business processes in companies, including accounting. The purpose of this study is to find out the level of business process automation in companies where students of the Vilnius College Accounting Programme have completed their professional practice in 2017–2018.

According to the data published by the Lithuanian Centre of Registers in 2017–2018, most of the investigated companies were in Vilnius and only one each in Kaunas, Elektrėnai, Ukmergė, Druskininkai, Rokiškis, Klaipėda, Biržai, Lentvaris, Trakai and Vilnius districts. When analysing the level of automation of accounting processes in companies, it was important to find out the structure of employees by company size (Table 2).

Table 2. Employee structure by company size in 2017–2018

Number of employees	Share of Lithuanian enterprises in the total number of economic entities in 2018 (%)	Number of bachelors' practice bases of accounting students (%)
0–9	81.2	50.0
10–49	15.4	27.9
50–99	1.9	1.5
100–249	1.0	7.4
250–499	0.3	8.8
500 and more	0.2	4.4

Source: Compiled by authors, based on data of the Statistics in Lithuania (Public Institution 'VersliLietuva', 2017, 2018).

The structure of Lithuanian companies is dominated by small companies with up to 9 employees; they make up 81.2% of all operating companies in Lithuania. In the sample of the practice bases survey, the majority consists of companies with up to 9 employees, which is 50%. The share of Lithuanian companies with 10–49 employees is about 15.4%, while the average number of practice bases of this size is 27.9%. Final employment practice bases, where the number of employees ranged from 50 to 99, corresponded to Lithuanian companies, but it is the smallest number of enterprises, where students have completed the final professional practice. It is

noteworthy that students are willing to do internships in large companies with 250 or more employees. Practice bases in large companies make up 13.2%.

The ever-increasing need to work more efficiently, the opportunities presented by technology and the ever-increasing challenges are driving companies to look for tools to streamline and automate their accounting processes every day. Process standardisation, data integration and digital document processing are the key areas for accounting improvement that advanced, market-oriented business companies want to stay competitive. The next step was to elucidate the automated processes of the investigated companies (Figure 1).

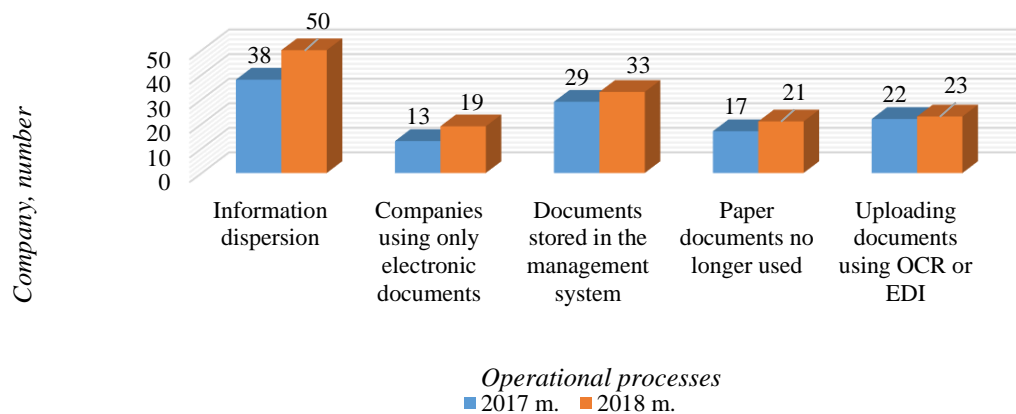


Figure 1. Automated business processes in enterprises. Source: Compiled by authors

Dissemination of information is an important automated process in a company's operations. The results of the survey showed that dissemination was carried out in 38 companies, and 1 year later, information was introduced to 50 other companies (72%) interested in the process. There is a positive trend in the indicator change as the dissemination of information in 2018 was carried out by more companies than in 2017 and gained almost 16%.

Document management is an integral part of corporate governance. The Law on Documents and Archives of the Republic of Lithuania is defined as document management of the state or a municipal institution, a company or an enterprise, an authorised person, a non-governmental organisation or a private legal person, which includes preparation, management, accounting and storage of the documents (Seimas of the Republic of Lithuania, 1995).

According to the questionnaire survey, the DVS is increasingly used. Business companies with executives, employees and clients using the DVS in 2018 increased by 8.1%. Companies primarily automated short, often repeated simple processes. In the next stages of process automation, companies faced problems such as:

- DVS is well organised; processes are automated but not used;
- The process is automated, but it has errors;
- The company has one non-automated process left, but is opposed by the owner.

To store electronic documents, it is necessary to have a set of technical and software tools (infrastructure). In 2017, documents were stored in 29 companies that used this system; to preserve electronic documents, companies periodically transfer (copy) them to new media and, if necessary, convert them to new formats that meet the requirements of the latest software. There should also be timely detection of any failure in the storage medium or equipment, verification of the authenticity of stored electronic documents and other storage operations and procedures.



All relevant information can be accessed from the workplace and paper originals are virtually no longer in use. In 2017, 17 companies made up 25.4% and in 2018, 21 companies (30.4%). An OCR or text recognition programme (optical character recognition) converts a digital image file into text. Such a programme can be installed in the scanner and at the same time, special programmes are used. The essence of electronic data interchange services is to ensure efficient and fast information exchange between trading partners and solve the problem of compatibility between different document formats and data sales channels. Automated recognition of source document data (VAT invoices, waybills, orders) and automatic data upload to the information systems (business or document management information systems) using text recognition or electronic data exchange technologies in 2017 was in 22 practice bases and made up 32.8%, and in 2018 there were 23 companies (33.3%). The change is very slight.

Comparing 2017 and 2018, it can be said that all activity automation processes are showing an upward tendency. The largest is noted in the dissemination of information. Accountants spend several times more time manually entering invoices into the accounting system, verifying data and travelling through different departments to their certifying staff as compared to digitising accounts. The research aimed to find out how many employees of the company carry out manual input of the primary document data into information systems (bookkeeping, office) (Figure 2).

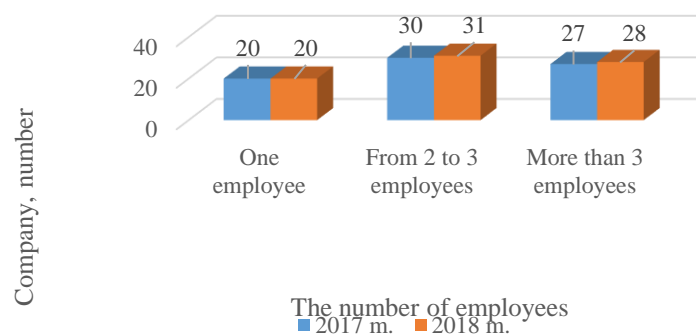


Figure 2. Employees entering source documents in companies manually. Source: Compiled by authors

According to students' chosen practice bases, during the period of the analysis, at least 1 employee in 20 companies manually entered the primary documents into information systems. The survey showed that the majority (30–31 companies) consists of companies where two to three employees manually enter the original documents. There is a slightly smaller number of companies (27–28 companies) where manual documents are entered by more than three employees. Comparing 2017 and 2018, according to the data of 2004, there was a slight rise in the number of enterprises where two or more than three employees manually entered the original documents. Accountants still do manual operations for most of their operations today. Thus, doing a lot of standardised tasks every day leads to unavoidable mistakes. Many companies in the country claim to have experienced this type of failure. Accounting errors result in wasted time for employees to correct such mistakes and often result in financial losses for companies. Automating business processes and leasing process functions would help the company increase operational efficiency and save costs (Figure 3).

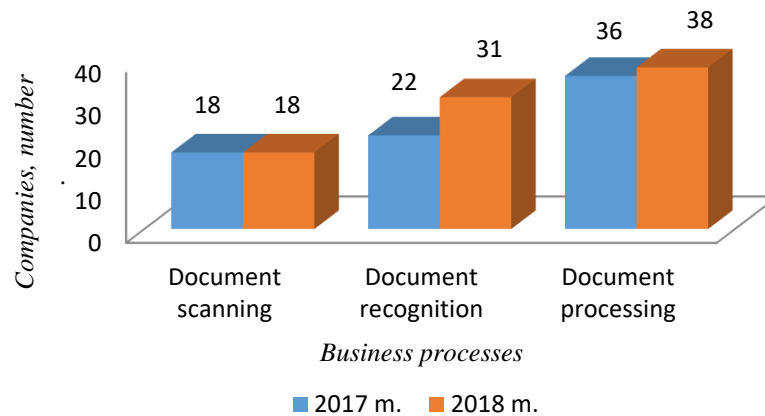


Figure 3. Operational processes that help a company increase operational efficiency. Source: Compiled by authors

#### 4. Discussion

The process of developing electronic invoices rapidly stimulates not only the business need to streamline financial processes by automating them, but also fosters government efforts to improve tax collection by introducing electronic data reporting obligations. During the investigation period, 18 companies performed document scanning and uploaded PDF images to the required document or business management information systems. Scanning and converting the documents into an electronic environment facilitated their search (Byrnes et al., 2018).

Data recognition from the source documents and automatic data completion in the information system with the attached copy of the document in PDF format for further processing or search in 2017 was carried out in 22 companies and in 2018 grew to 31 companies. Comparing 2017 and 2018 shows the biggest change in the business processes of the surveyed companies, with the number of enterprises increasing by 12.1%. Processing and storage of electronic documents in a specialised information system, implementing access control, validation sequences, efficient search and long-term storage in 2017 was carried out in 36 companies and in 2018, in 38 companies.

The survey has shown that every year, more and more surveyed companies are engaged in the automation of business processes. However, there is still a lot of duplication of work and manual input of source documents. The need to work more efficiently, the opportunities afforded by technology and the new challenges that we face every day make companies look for tools to streamline and automate their accounting processes. For the implementation of automated processes, it is very important to have highly qualified employees who have a thorough understanding of the organisation's activities, automation goals and needs and can take up this job. Automated technologies should be deployed in areas where there is a large flow of uniform operations. Lithuanian companies are already in the process of automating business processes (Fernandez & Aman, 2018). Automating monotonous jobs creates better working conditions for the employees, increases work productivity, speeds up paperwork and saves time and money. Some large companies are already installing robots in their systems and are aiming to have no paper records.

#### 5. Conclusion

The structure of Lithuanian companies is dominated by small companies with up to nine employees, namely they supervise the final work practice of the accounting students. There is an upward trend in all activity automation processes, with the highest in information dissemination. It is increasingly used in DVSS. There was a slight increase in the number of companies investigated



where two or more than three employees manually entered the original documents. Every year, more and more surveyed companies get involved in the automation of business processes. However, there is still a need for duplication work, and accountants are still performing manual operations most of the time.

Automation of accounting processes influences the profession of an accountant and makes his/her work simpler and more interesting. The traditional image of an accountant is changing as robots take over manual data entry into accounting software. One of the key competencies of an accountant is the formation of an accounting information database using information accounting systems. Today's accountant needs more information technology knowledge to understand how accounting systems and processes work. When preparing a future professional, it is important that he/she not only acquires accounting knowledge and practical skills but can also recognise and critically evaluate problematic situations, make reasoned decisions, constantly improve knowledge and not be afraid to change.

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