

University of Economics, Prague

Bachelor`s Thesis

2020

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Faculty of Business Administration

Bachelor`s Field: Corporate Finance and Management



Title of the Bachelor`s Thesis:

Digital Collaboration Tools and Operations Management

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Declaration of Authenticity

I hereby declare that the Bachelor`s Thesis presented herein is my own work, or thoroughly and specifically acknowledged wherever adapted from other sources. This work has not been published or submitted elsewhere for the requirement of a degree program.

Prague, January 3rd, 2020

Signature

A handwritten signature in black ink, appearing to read "J. Prokeš". The signature is written in a cursive style with a large, stylized initial "J" and a long, sweeping underline.

Acknowledgement

I would like to express my appreciation and gratitude to my thesis supervisor, Ing. Felipe Martinez, who provided insight and expertise that greatly assisted with the research of the thesis. His guidance and valuable comments were of major help and pointed me in the right direction when writing the thesis.

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Abstract

This thesis describes the main benefits of Ecommerce. Due to the fact that Ecommerce company can be operated from anywhere in the world, a set of smart performance management tools is beneficial. In order for the tools to be managed properly, the methods of Operations management are essential. For practical part, an examination of the processes of a product management in a small Czech Ecommerce store is provided. This process is digitalized with collaboration tools such as Trello or Slack. The whole procedure is thoroughly analysed both with SIPOC analysis and Flowcharts. The changes are monitored based on principles from Operations management, more specifically with Five Performance Objectives framework. As a result, a list of recommendations is provided as a handful tool for managers and company owners who consider upgrading their processes to the digitalized form. From a management perspective, the digitalization improves overall efficiency of the process of product management.

Key words: Ecommerce, Operations Management, Performance Management, Digitalization, Slack, Trello

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INTRODUCTION

Ecommerce opens new doors for many people who want to offer products or services in a very cheap way. It is very cost-efficient to establish an Ecommerce platform, which means that the barriers to entry are very low. However, when specific Ecommerce business grows, there are problems which can occur in any other type of business industry. One of the crucial ones is communication. Ecommerce businesses tend to hoard lots of inventory mainly because the demand shifts very quickly, and the platform has no limitations. It has no limitations primarily because it works 24/7, and there might be ten thousand people shopping at the same time, which is a big difference compared to brick-and-mortar stores. As the Ecommerce company grows, the management should try to establish the communication processes as straightforward and fast as possible.

This Bachelor thesis brings the reader a clear understanding of the theory behind the virtual communication tools, which can be beneficial in companies, and as well it will analyse them via methods from Operations Management.

The thesis describes the communication process when an Ecommerce company, which focuses on Hand Tools and Garage Equipment, receives a shipment of brand-new goods in front of their warehouse. The company is AHProfi and has been in the E-commerce business for over twenty years. More information about the company is in the fourth chapter. The process starts when the goods are placed in the warehouse. Therefore, the company has to make sure that the products are submitted on the website in the best possible quality, at a suitable price, with the right parameters, in the shortest amount of time. This process is explained with the help of Flowcharts and SIPOC analysis so the reader can imagine the process more vividly. The first process is described as the one without digital tools, unlike the second process, which uses well-known collaboration tools, which are detailly described in the second chapter.

Although the literature presents several papers on the communication tools as well as operation management, the role of these tools in operation management is rare in the literature. This Bachelor thesis illustrates how these new communication tools facilitate the task from an operations management perspective. The fifth chapter of this thesis provides companies with a set of recommendations to take into account when considering the digitalization of their processes in terms of performance management and process effectiveness.

1. ECOMMERCE AND OPERATIONS

The trade between people has been very influenced by recent phenomena called electronic commerce. People now are buying things with the help of their computers and smartphones in a matter of seconds. This trend has been rising since the 1990s and has helped many entrepreneurs build their wealth based on it. The richest man in the world, Jeff Bezos, is the king of electronic commerce with his multinational empire called Amazon (Stone, 2014). As companies are established on the principles of ecommerce, they tend to have different cost-structure than brick-and-mortar retail stores. They differ in need for costs, more specifically in physical stores. One of the differences can be the costs to employ salespeople – basically, the costs to enter this market is significantly lower. Since companies are aware of this fact, they tend to grow much faster. Once they grow, however, they lack organizational processes, and as a member of such a company, I decided to write this Bachelor Thesis about the process improvement in our company.

1.1 Ecommerce

E-commerce, or electronic commerce, largely means buying and selling products through the internet and is commonly associated with online shopping. (Satista.com, n.d.)

E-commerce is the business of buying and selling goods and services on the Internet (Cambridge English Dictionary). In other words, E-commerce is any business activity that happens online. Originally, the tools of e-commerce were used to make commercial deals easier in electronic form. The first e-shop was invented in 1979 in the UK by Michael Aldrich. In 1980 e-shop became widely used by big companies such as Ford, Peugeot, General Motors, and Nissan. In other words, the first virtual platforms were intended for the automotive industry. Since 1990, people started to use E-commerce for enterprise resource planning (ERP), intellectual analysis, and data warehousing. Beginning in 2000, the majority of American and European companies, offering their services on the Internet, began to develop a massive network of E-commerce. When Asian companies joined, products and services became even more accessible. The term «E-Commerce» had not been used until the year 1997. At the end of the last century, it was created and circulated in the IBM company. Nowadays, E-commerce is an integral part of society. Goods through the Internet are ordered by tens of millions of people around the world. E-commerce between organizations is called B2B. Trade occurs between businesses, so the company seeks partners for establishing a network of suppliers and customers. For work in this sector, there are used corporate sites, wholesale e-shops, and different social networks for business people. E-commerce between organizations and customers is called B2C. It is any form of goods exchange and services for one or more clients. Often it is about retail chains: all types of e-shops or auctions. E-commerce between consumers is called C2C. It is a secondary market in the format of different online platforms. In trade between consumers, entrepreneurs should not participate. One of the consumers assumes the role of the seller, and another is the customer. The website that is a legal entity or a person only mediates between consumers in such transactions. E-commerce between consumers and businesses is called C2B. It is an insufficient sector of E-commerce that only has been

developing in past years. In the case of C2B, the consumer is a natural person who can offer specific goods or services to entrepreneurs.

In general, the typology of E-commerce is formed depending on subjects participating in its process. The type of business depends on the object (consumer goods or services) as well. For instance, some goods and services can be given directly in the network while others have to be carried by post and couriers. The first approach is called direct, and the second is indirect. There is also a hybrid, combining the features of both.

Every business can operate using e-commerce platforms. To do that, companies simply should have the technology to provide this type of service. In today's fast-moving world, with the development of E-commerce, we can buy and sell products wherever we are and whenever we want. Moreover, if we are talking about the price and sellers, running a business online is cheaper than running a business traditionally. Regarding consumers, buying products online can save time as well as the customer can have much more choices since they can buy products from all over the world. On the other hand, the buyers cannot physically touch or smell the product that they want to buy. It is possible to do only after delivery of the product and, most frequently, even after payment. Although, nowadays, most of the sellers allow returning a product if the customers have some problems with it or even they simply do not like it. But, unfortunately, in these cases, they have to pay delivery by themselves. Thus, each type of E-commerce has its own characteristics. The industry is still in a phase of development, and many tools are only emerging. Business in the form of E-commerce has conquered the whole world over several decades, featuring companies like Amazon, eBay, Netflix, and others.

1.2 Operations

Operations management is concerned with creating the services and products upon which we all depend. And all organizations produce some mixture of services and products, whether that organization is large or small, manufacturing or service, for profit or not for profit, public or private (SLACK, 2013).

Ecommerce companies tend to have a different management structure than other businesses. They can operate in multiple countries without having a single office space nor an employee (Durai, 2010). These management structures are very new, and management or communication problems can arise very quickly. The book *Enterprise Processes* explains: "Everybody wants to improve a process once they stand in a long line of people" (Řepa, 2007), which is then followed by many handful tools for improving processes within a company. The main target of operational strategy is to develop a common policy and plans for the use of resources of the company, aimed at the most effective support for its the competitive strategy, together with the corporate strategy, they cover the entire spectrum of the company's activities and involves a long-term process that is designed to provide the company with the ability to respond quickly to any inevitable changes in the future (Chase, 1998). Some E-commerce companies adjust their strategy to the weather conditions because it is observed that people tend to have a different consumer based on weather conditions. The companies tend to adjust their operations in terms of the number of staff for the upcoming week, the amount of inventory they

will need for the next week, and other operations which can decrease the risk of having either too much work or not enough work for their workers (Steinker, 2017).

The question for Ecommerce managers is: “how to adjust the operations to an Ecommerce company in the most effective way?” It might be difficult for managers to adjust the methods they were thought in University once the whole structure works differently than in usual companies in which every employee is present approximately 40 hours/week. When combining Ecommerce and Operations, it is difficult to prepare perfect conditions for the workers of the company based on the fact that the sales are increasing and decreasing very quickly (Żuchowski, 2016). The demand for the products is very hard to forecast, which means that the operations should be very flexible to be able, at any moment, to adjust and still maintain the level of customer satisfaction the company promises (Żuchowski, 2016).

Regarding the company, this thesis describes, a perfect example can be the significant differences based on the time of the year. Usually, the operations are quite smooth in Q1 because the demand is lower compared to other quarters, which means the only difficult operation is the inventory check. However, when dealing with Q2, processes become extremely important as the amount of goods coming to the warehouse increases. This is explained by the buying habits of the purchase department, which is to be explained in this paragraph below. Also, in Q2, the demand for gardening products increases, so the company as a whole encounters increased workload compared to Q1. Nevertheless, the most important period of the year for the company is the Q4 because of Black Friday and, of course, Christmas. The demand for the products increases usually by 200%, which means an incredible workload on everyone, and that is when the rules for operations come in handy. The company has to ship sometimes more than 400 shipments a day, even when another batch of goods enters the warehouse. As the workload increases for everyone in the company, communication is a key factor to success. When the year is over, the process of re-stocking the goods is as follows. The purchase manager calculates the difference between the amount in stock and the amount sold. Based on that number, he orders new containers of products. As he does this during January, the products usually come to the warehouse during Q3, which, as mentioned earlier in this paragraph, becomes a problem because the demand quickly increases. The digitalization changes aim to minimize the problems which arise when the demand shifts. As clarified earlier, the demand shifts dramatically twice every year.

2. COMMUNICATION TOOLS

This part describes three main communication tools which are a part of a process transition from the first process to the second process. These tools are Slack, Trello, Skype, and Toggl. All these collaboration tools have the same overall goal, which is to connect teams or colleagues within a certain company, regardless of their locations. There are two barriers, which are the Internet connection and the presence of a smartphone or a computer.

2.1 Slack

MacArthur's lab isn't the only scientific group that swears by Slack, which was launched just three years ago, but now boasts more than 3 million active daily users worldwide, and which has rapidly become popular with media organizations and technology firms (Perkel, 2017).

Slack is a very simple communication tool based on a common way of message exchange introduced to the market in 2013. One can compare it to the Facebook Messenger, which is a platform for a real time message exchange used by billions of users. Slack is also a tool which connects teams within corporations because it offers a very simple feature. One user can ask other users to join the virtual team, and every member can join in the conversation instantly to be in touch with his / her colleagues. This feature can help in various departments of a company. In our specific company, the most frequently used team chat is "Marketing", so every marketing employee can be aware of the news within the department. However, many employees use it only as 1:1 communication tool at work because one can add large files such as PDFs, pictures, and others. It is also very useful when the company uses Google Drive, Dropbox, or other online storage systems because Slack can integrate those inside of its own interface. This means that it is very user friendly, and users have access to many storages immediately. So, the two main processes which occur in Slack can be described this way. One employee has got some important message which he or she has to transfer immediately to another employee. He decides to use Slack because it is both on his computer and also on his smartphone. It is a win-win situation for both parties because the other employee receives the message again both on the computer and on the smartphone. The other situation can be described as a virtual meeting. In our specific case, it looks like this. The manager has something to say and wants to hear the feedback from everyone in the department. He or she decides to send the message to the team called "Marketing" because he knows that everyone will get the message instantly. It is a very efficient way of communicating within the company because it is very simple and also, to some limit, free of charge (Johnson H. A., 2018)

According to a statistical web page Statista.com , Slack has around ten million active users all over the world in January 2019. (Liu)

2.2 Trello

Trello is the most interesting collaboration tool out of these four. It is a computer program which is widely used by companies all over the world. It is a platform for employees

and managers, which enables its users to collaborate on certain projects or tasks virtually. The most used feature in our given company proceeds this way. An employee finds a mistake or a room for improvement on the website. He or she has to decide how to inform the designated person who can repair such a mistake. One way is to message him directly, which is very often done, but it is not very effective. Its ineffectiveness is determined by its way of delivery because the designated person has to stop doing whatever he might be doing at the moment and has to pay attention to the message. The other fact is that the person has to leave a reply, or the person writing the message might feel unimportant. So, the next step might be that the designated person fixes the problem immediately, which might seem effective, but in the sense of performance management, it is not very efficient. The task, which has been worked on before the message, has to be paused, and the designated person loses attention and focus. The point is that the mistake alert has only two solutions. Either the person fixes it immediately, or the person forgets about it after reading it, which happens very often in our given company.

Trello founders did find a solution. They have programmed a very smart collaboration hub in which an employee does the following:

- a) creates a “card” which he or she names according to the issue he is about to submit
- b) he or she explains the problem
- c) assigns a designated person
- d) adds a screenshot
- e) sets a deadline
- f) creates a checklist
- g) controls the progress
- h) marks as finished

This process ensures smooth execution of a problem, and the best feature is that everyone in the department can see the stage at which the process is. These “cards” are pinned to a notice-board, which is also adjustable so the cards can be folded in one column with other topic-related cards. This makes it easier for everyone to be quickly oriented on the notice-board. It is very user-friendly because the user can see these cards anywhere he logs in. After all, it works online and does not need to be downloaded and installed. It can also be used on any smartphone. This is a very good tool for a manager because he is aware of the actions which are happening between his colleagues even-though he is not present physically in the office (Johnson H. A., 2017). According to Craig Smith, Trello had over 35 million active users in March 2019 (Smith, 2019).

2.3 Skype

“Almost all humans are familiar with Facebook, Skype, and Twitter. The benefit is the possibility to send short tweets and posts for existing followers and groups of friends” (Keith, 2016).

Skype is the oldest collaboration tool out of these four. It is also widely used in public, so it might be assumed that everyone knows the “magic features” of Skype. For those who do not, this paragraph explains it. Skype is a program which enables users to make calls 1:1, more specifically real-time face-to-face calls via an internet connection and a smart device e.g.

smartphone, laptop, or a PC. Besides, it also enables users to hold video-team-meetings, which means that more than two people can join the video-call and take part in the meeting from wherever they might be at the moment. This feature is very important also for our Ecommerce company. Skype is also used by the public, however, it brings more effectivity for companies nonetheless (Champ-Blackwell, 2008).

According to statista.com (Koptuyug, 2019), Skype had registered over 1,33 billion users from 2009 – 2017.

2.4 Toggl

Toggl is a very modern and very simple tool to use (Toggl.com, n.d.). It is also very practical for everyday life and time management itself. Toggl is essentially a timer which is easy to use for tasks at work. It works just as a timer on everyone's phone, but the various time sequences can be categorized, named etc. This makes it simple for other users, who can be, for example, the owner, to evaluate how much time it actually takes to finish up with a certain task. Another great feature of Toggl is the reporting feature. It makes it very effective to create a report with just one click so the employee can send it in a matter of seconds, and the owner is aware of the task which has been done that particular time period. According to the official website of Toggl, they had over 1,6 million users in 2016.

The best thing is that with the connection of these four collaboration tools, one can manage his or her team effectively regardless of his or her current location (Mah, 2014).

3. THE FIVE PERFORMANCE OBJECTIVES

This thesis compares collaboration processes within a company, according to (SLACK, 2013), it is recommended to use some of the tools which are described within the book of Operations Management. The Five Performance Objectives framework is divided into five different approaches. Each of these five objectives gives the reader a different point of view on the process, which ensures a better understanding of each perspective. The reader can also observe an included scale from 1 to 5, which also helps to understand the severance of every change in the process implementation.

3.1 Quality

Quality is consistent conformance to customers' expectations, in other words, 'doing things right' (SLACK, 2013). Quality is one of the main pillars of a successful business (Keith, 2016). It is very important to have the "right" parameters of both the process and the product.

Companies often tend to make mistakes during their processes, which means not only dissatisfying the customer but also increase costs (SLACK, 2013). The company should always consider the quality of the product or the process because the easiest way of doing things isn't always the cheapest one.

Scale for comparison:

1	2	3	4	5
Worst fulfilment of parameters - the customers are extremely unsatisfied with the process	Bad - customers tend to refuse the process	Efficient - customers do not complain neither like it	Very good - customers tend to like to process and therefore are happy to work	Excellent - customers are very happy

3.2 Speed

Speed is, for example, the amount of time which it takes for the company to deliver the product to the consumer. It can be both the speed of the process of uploading the product, which means it is not physical. Or also, it can count the number of days before the product gets from the warehouse to the customers' front door. In Ecommerce, speed matters very much, so much that it can create a competitive advantage. In fact, the biggest Ecommerce player in the world, Amazon, puts speed of delivery into its "Keys to Success" as part of the "Customer obsession" as it is called by Jeff Bezos, the founder of Amazon (Tabaka, 2019).

On the other hand, speed can also mean the execution of problems in the company. It could mean something like: “how long does it take to load our webpage?”. Speed is a crucial part of overall effectiveness within the company. Once the processes are not set in the right time-range, employees are not doing effective work, and therefore the company loses potential profit. In the case of product upload, the optimal pace is maximum four hours for ten products. The start is a delivery truck in front of the warehouse, and the finish is a fully optimized product detail on the website AHProfi.cz.

Scale for comparison:

1	2	3	4	5
Worst - very slow, it is very uncomfortable for employees E.g. 10 days for 10 products	Bad - very slow, there is a need for an upgrade	Efficient - customers tend to be slowed down by the process	Very good - process is fast according to the needs of the process	Excellent - process faster than the capabilities of customers. E.g. 1 hour for 10 products

3.3 Dependability

Dependability can be explained as the ability to fulfil expectations. It can be implemented both inside in the company, which means, how dependable are some processes or colleagues. The right question might be: “What would we do without this process?” ; “Are we dependent on it?” Once the answer is no, the process cannot be forgotten or deleted, it can be only improved.

The second understanding of dependability might be: “Are we doing what customers expect us to do?”. This can be understood as fulfilling the promises and the messages, which we send out to the public. The company has to stick to its promises in order to build trust in the customer. Once the customer cannot trust the company, they are not likely to buy their product again.

Scale for comparison:

1	2	3	4	5
Worst - process cannot continue	Bad - very dependable on technology, high probability of failure	Efficient - problems might arise but not very often	Very good - almost independable; no need to be worried about malfunctions	Excellent - process independable on technology

3.4 Flexibility

Flexibility is the ability to adapt as quickly as possible. In Ecommerce, the trends shift incredibly quickly. One of the main changes which happen all the time is the users' interface, so companies hire or outsource a UX specialist who maintain the visuals of the website to make the customers way as comfortable as possible.

Also, flexibility means how quickly the company can change its processes within. How quickly it can react to sudden changes in staff – one specialist can suddenly leave, and what happens next? It is up to the company to set the right processes in order to react to sudden changes as fast as possible, in other words, to be flexible.

Scale for comparison:

1	2	3	4	5
Worst - the process cannot be changed or adjusted	Bad - very hard to change or adjust the process	Efficient - it is not hard, but rather time-consuming to adjust the process	Very good - the process can be adjusted quickly by specialised people	Excellent - the process can be adjusted immediately by anyone

3.5 Cost

Cost management is one of the most crucial parts of the company. The company has to keep the costs according to its earnings and strategy. Usually, companies try to keep the costs as low as possible to attain the highest possible profits. However, we can see plenty of companies which aim to satisfy customers first at whatever costs because their margin on their products or services allows them to. This part of the strategy has to be aligned with the quality of processes and products because these two aspects are crucial for healthy wellbeing of the company. The company can, for example, have the lowest costs on the products manufacturing point of view but it might be lacking the quality which customers require.

In terms of Operations management, the designated worker, e.g. Operations Manager, aspires to reduce the costs of processes (SLACK, 2013).

Scale for comparison:

1	2	3	4	5
Worst - process unprofitable	Bad - the process does not create profits	Efficient - profit is positive	Very good - there are very good profits	Excellent - there is no need for money inflows

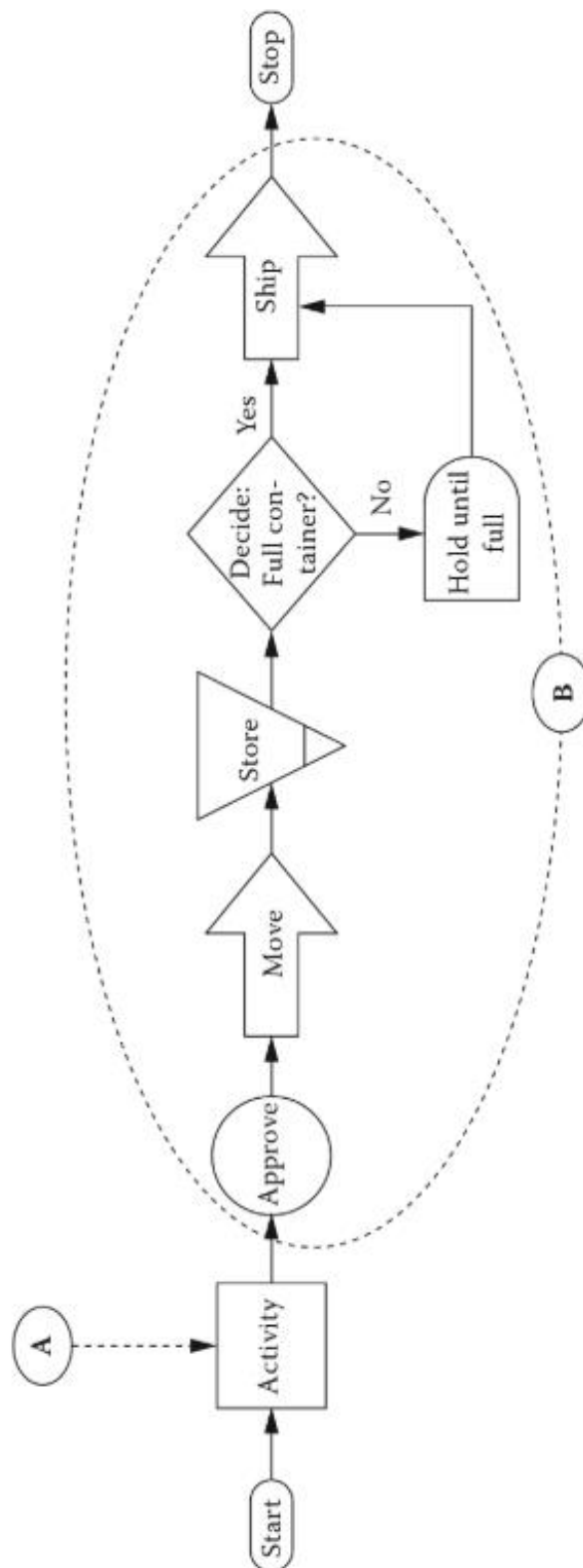
3.6 Process Mapping

The process can be described in multiple ways for a clearer understanding of each of the steps, which are crucial for any process analysis. Very good tools for this thesis are Flowcharts and a SIPOC analysis. These two methods are explained in further detail below.

3.6.1 Flowchart

A Flowchart is a graphic tool for anyone who wants to describe a process graphically, so each step is very clear. With flowchart, one is more likely to explain a certain process because the steps are clearly interpreted by known symbols. They do not contain long sentences, and their only aim is to illustrate the written process within symbols and direction. For a better understanding of the flowchart tool, the reader can find an example on the next page.

3.6.2 An example of a Flowchart



(Damelio, 2011)

3.6.3 SIPOC

In his book *The Leader's Handbook*, Peter R. Scholtes describes the SIPOC as an elaboration of the systems diagram used by Dr. Edward Deming in his lectures to Japanese industry leaders in the summer of 1950 (Scholtes, 1998).

SIPOC is an acronym of beginning letters of a shortcut:

S = suppliers

I = Inputs

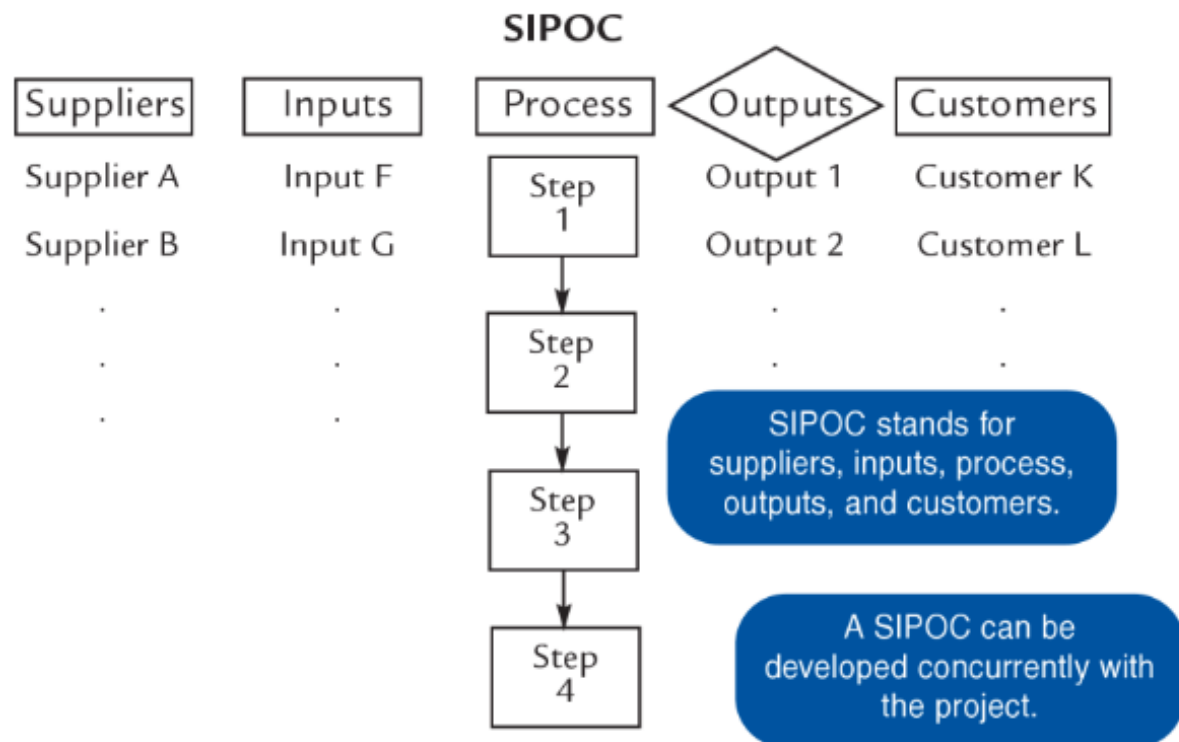
P = Process

O = Outputs

C = Customer

The SIPOC analysis is ordered chronologically to illustrate the key pillars of a process. It is very important to understand the pillars of the process to see which part can be changed and which cannot. This method also helps to identify the key suppliers and customers, which a useful tool when trying to improve the process. However, SIPOC is usually very simplified for a clearer understanding of those parts.

The picture below shows the SIPOC method structure graphically. (Rasmusson, 2006)



(Rasmusson, 2006)

4. OPERATIONS COMPARISON

4.1 Organization description

Small and medium-sized enterprises (SMEs) play a crucial role in contemporary societies. Besides being a significant source of employment, SMEs are responsible for economic development and innovation, family income and wellbeing, social change, and greater empowerment (Barroso, et al., 2019).

The goal of this Bachelor Thesis is to determine and compare the main processes in a small Czech Ecommerce store, which specializes mainly in B2C retail, more specifically on hand tools and garage equipment. The chosen company is called AHProfi, it is a family-owned business with over 20 employees. AHProfi was established in 1995. The main source of revenue is the website www.ahprofi.cz. AHProfi offers customers the possibility to try out the product assortment at one-and-only brick-and-mortar store in Dysina, which is located 5km from Pilsen, CZ. Even-though the company offers the physical store experience, most of the revenues are generated by the website because customers are used to the benefits of E-commerce. This company is a good specimen for the topics which are described in this thesis. As the company maintains a big warehouse, purchasing department, marketing department, and others, a need for effective overall processes is essential.

4.2 Earliest operation

The process which is described below is addressed as the first process without digitalization. This section is divided in to more parts as the process needs more than one person. The process starts in the warehouse regardless on worker, anybody from the warehouse can proceed. Next participant is the purchasing department which solely relies on the purchase manager who ordered the goods himself. The last part relies on the marketing department. The reader is provided with graphical representation of the process via Flowchart and SIPOC analysis.

4.2.1 Warehouse part of the task

The product management in the chosen company had been executed in an old-fashioned way until the spring of 2019. That was when the Management of the company decided to try out some of the collaboration tools which have been previously tested as a performance management tool before. During the summer of 2019, the company tried out a few innovations in the process of product management, and it increased the overall effectiveness. The effects are described throughout the chapters.

The first process is done as follows.

- 1) Delivery truck driver knocks on the door of the warehouse. This means that the company is about to unload either 40 feet (FEU) or 20 feet (TEU) container, which is a standard type of delivery. This company receives around 40 FEUs and 20 TEUs annually. The goods are being unloaded by-hand as the goods are not loaded on pallets.

- 2) As the goods are being unloaded, they need to be counted because the manufacturer might have made a mistake, and there can be a different number of goods compared to what the company paid for.
- 3) Once the goods are unloaded, they are randomly placed in the warehouse.

4.2.2 Purchasing department part of the task

The interesting part of the product management starts as soon as the goods are placed in the warehouse because now, the other departments' job is to upload each product on the company's website. There are of course numerous barriers and obstacles, which need to be overcome to bring this process to a perfection. In the first process, there is a Purchasing manager who needs to be present during the unloading process to make sure that the company receives the goods which they ordered. Once that is correct, he goes to his office to talk to his colleagues. His colleagues are the Product manager and the owner. They consult the prices which means that 3 people are involved in price settings of every product which enters the doors of the warehouse.

As soon as they come up with the price, the Purchasing manager goes to the marketing department in person to announce these new goods the company just received. As he comes there, out of nowhere, everyone has to stop whatever they are doing at the moment to pay attention. As the Purchasing manager announces it, they have to come up with the plan immediately otherwise it would have been forgotten. Usually there is about 200 new products, which means an incredible time-consuming setback for the marketing department because the marketing colleagues have to make up everything about the product. To "make up" in the Ecommerce business means to come with a unique photo and product description in order to create the competitive advantage, more specifically the differentiation factor. As the Purchasing manager leaves the marketing department, his part is almost done. Almost means that he is still partly responsible for the products to be uploaded as soon as possible. The reason is very simple, there is no other way that the items will be sold than when they are online. So, in order to sell them, the company has to show them to the public on the website. This thought can be also explained as: the sooner the product is online, the sooner it can be sold, the sooner it is sold, the sooner it leaves the warehouse - which means the company makes profits and therefore can restock with bigger volumes.

4.2.3 Marketing department part of the task

From the paragraph above, the reader is already aware of the situation when it comes to product management and the "uploading process". The marketing representatives are usually the ones who need to do the hard work unlike the purchasing department, which tends to widen the assortment as quickly as possible based on their emotions.

Once the process of communication is known, the actual uploading of the products can be described. As the company imports the products, which nobody else offers, it needs to develop its own descriptions and photos. That might become a problem, time-wise, since the

company is very small, there are only five representatives of the marketing department, and the management keeps on giving them more work-load as the assortment grows. The process in detail looks as follows. The Purchasing manager hands out a printed version of an Excel file containing a list of products with product codes, prices, and parameters. He then lets the marketing department decide who is going to do which part of the “uploading process”. What usually happens is that one of two copywriters took the Excel list and goes to the warehouse for a couple of products which he or she then starts to take pictures of. Once he or she takes those pictures, he starts uploading them according to the product code given by the Purchasing manager. As soon as he takes a few pictures, he starts to make descriptions, and therefore, the product is almost ready to be uploaded live. Live means that the product is available to the public on the company’s website. However, each product takes some time. I must not forget the fact that, at this point, the company does not know how much time it takes to create one product. It refers to the process of taking the product from the warehouse all the way to the product being „live“. Also, when there are more than five products, it is very easy to lose track of the progress of uploading because, as mentioned above, the marketing department keeps getting more and more workload, which results in the completion of more tasks at the same time.

Based on the fact the company receives approximately a hundred pieces of new products with every twenty of forty feet container, the situation of poor performance management rises. How? Nobody knows the stage, at which the products are at the moment unless they ask the specific person. The specific person, usually the copywriter, might have more priorities to work on, and the workload with the uploading is not that necessary (for his job duties). At the same time, other colleagues in the marketing department might be waiting for the upload of the products because they might have a campaign ready in which the product could be sold quickly. So, these colleagues had to ask the specific person again. These questions do not create the best working environment and therefore are not very effective since everyone has to get up from the chair and walk to the colleague who might be focused on something else.

4.2.4 SIPOC – first process

The following graph describes the main pillars of the SIPOC analysis. First, it is important to define these five aspects of SIPOC methodology. There are many Suppliers to our process, it is important to mention that all of them are crucial in terms of the first process. However, the most important ones are the managers because they report directly to the owner, and therefore, they are responsible for this process to go smoothly. We can see that the input is a list of products, camera, and the physical products which need to be uploaded. Based on the fact that the company is an e-shop, it would be impossible to work without a PC or a laptop. It is assumed that the company has got enough cameras and computers to prevent failures in this part of the process. Despite these facts, the company is still very dependable on the PC and the Internet. The process is described in detail in the section above, more specifically in [4.1](#). The output is hard to define precisely because the product can be uploaded in many variations. It is possible to imagine a product with a picture taken from a wrong angle, the description can be misleading, etc. However, the aim of this aspect is to define what is the output, and that is specifically a visible online representation of the product found in the warehouse with the

materials from the purchasing department. In terms of customers of this process, one can define both the managers and also the customers. The aim of this process as a whole is to maximize the probability that potential customers will be convinced by the photos and description that the product is what they are looking for. The table is to be found on the next page.

Suppliers	Input	Process	Output	Customers
Purchase manager, Warehouse manager, Marketing manager	List of products Product Camera PC	Product upload by copywriter	Products on the website	Buyers, customers

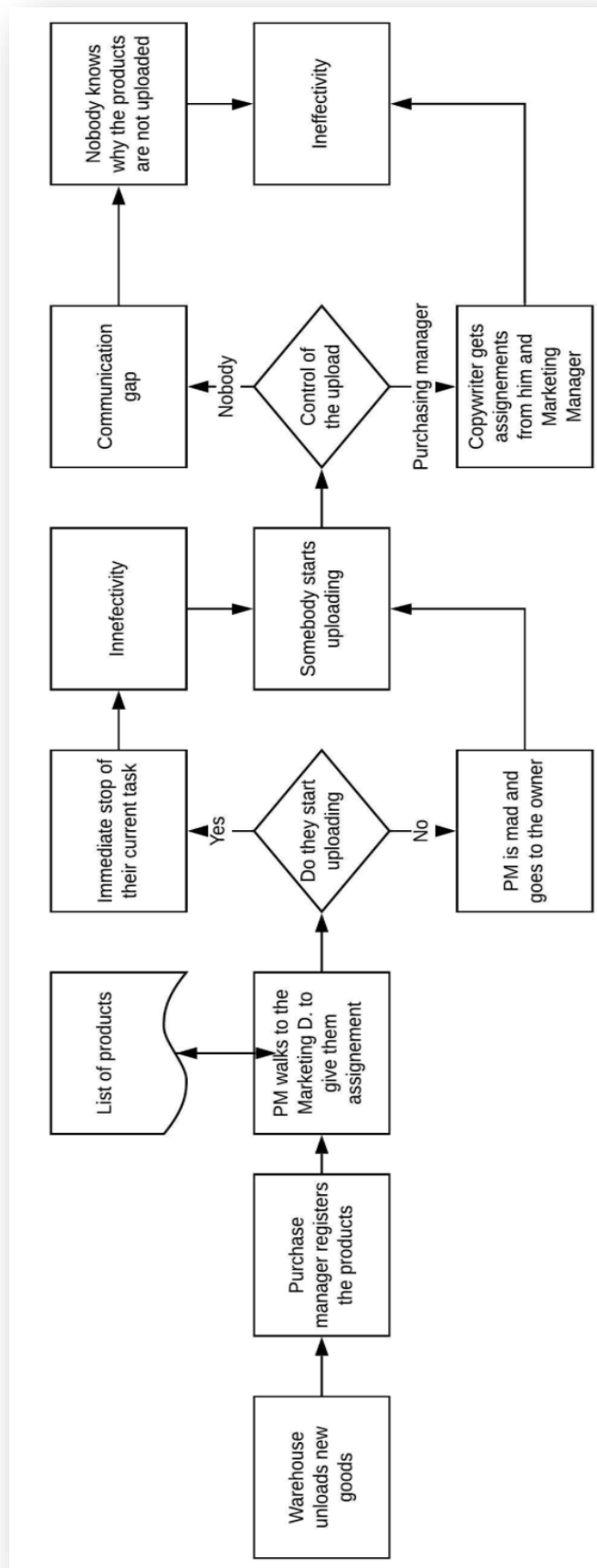
4.2.4 Flowchart of the first process description

The reader can observe the second process described graphically via Flowchart on the next page.

It is evident that, from the third step of the process, there are steps, which can be optimized via digital tools. For instance, in the third step, there is a need for the list of products, which is a crucial element for the whole process. The list of products is crucial because it offers all the information which is needed for registering the product into the system. Furthermore, if the Purchase manager would get sick or simply would not be present at the moment when the goods arrive at the door, the process would get stuck in the third step.

During the fourth step, lots of communication errors usually occur. One can see there are only two options. The marketing department either starts to upload, or the PM is upset and goes to the owner to complain. These steps also affect the overall effectiveness of the organization as the changes are usually unplanned. As a result, we can observe the fifth step, but there is no feedback from the marketing department neither to the purchase department nor to the owner. Based on these steps, it is evident that there are lots of bottlenecks within the first process. One can observe that it is easy to produce mistakes in terms of product upload.

4.2.5 Flowchart of the first process



Source: Author

4.3 Implementation of the new process

At first, as a person who was given the right to improve the overall product management process, I had to analyse all the processes which are involved in the product management.

Then the research was conducted on the internet, which included questionnaires for my friends and people whom I am in connection with on LinkedIn. I found out that many companies are already using very similar collaboration tools. The most used ones are described in detail in this Thesis. After I gathered enough data about the collaboration tools, I started to find ways what would be the best usage of these tools specifically for the company. The reader can find a SIPOC chart in the last part of this chapter.

4.3.1 Trello

At first, an introduction of Trello was to be presented for the marketing department of AHProfi. They started creating “cards”. These cards showed up to be very useful because the managers could see what the workers were working on at the moment. The managers were offered to check the progress of their work when they were out of the office, thanks to the iOS version of Trello. Once agreed on the usefulness of Trello, the management decided to try it out for the whole company.

Second an introduction of Trello was to be presented for the purchasing department of AHProfi, which was very happy to hear that there is some kind of a collaboration tool, which enables the whole company to track the progress of a certain project.

The official collaboration started once the products landed in the warehouse. The Purchasing manager created a card with the list of products, and he made comments about the importance of those products. He also set a deadline and assigned a designated person who would be taking care of the specific batch of products which needed to be uploaded. On the other side is the Marketing manager who is aware of those products, and the designated person starts to communicate with the Purchasing department. As the products are being uploaded, the Purchasing department knows how many products are done. Everyone from the company can join in on the card and create a comment which is useful when it comes to customer questions such as “When will the product be available for purchase?”– these answers can be found in Trello.

4.3.2 Slack

It is important for people to pursue a work-life balance, which would be difficult to manage if our phones would alert us about work-related issues 24/7. Based on that, a need for a separate application was a must-have. Slack was a perfect choice for the employees to communicate in. The best feature of Slack is that it divides work communication from personal communication. Slack is very comparable to WhatsApp and Facebook Messenger, there is no doubt about their similarity. However, the differences are significant. When a person communicates on Facebook Messenger, he or she seeks a pleasant conversation with his or her

friends, which means it is a virtual relaxing place. The crucial thing is that the combination of friendly conversations and work conversations would drag the relaxing factor out of the chosen medium. Hence Slack comes in handy because one can easily turn off the notifications for Slack once he or she leaves the workplace.

Slack was introduced to the company at the same time as Trello. It was much simpler for everyone to use. This application aims to interconnect employees in the most comfortable way. Slack offers a very pleasant interface with lots of features and connectivity abilities to other platforms such as Google Drive or Trello. So, after a complete implementation, regarding the product management processes. The Purchasing manager can easily contact either the designated person or the whole marketing department as Slack makes it very easy to communicate with teams. It is very effective because the manager or the owner can see the problems in their communication and solve the problems accordingly. It is also very useful with its connectivity with other platforms such as Google Drive or Dropbox.

4.3.3 Skype

Skype is one of the least used tools in the company as the technology cannot be used for daily needs. However, the feature of videocalls makes it a lot easier to hold meetings on the long distance, which occurs quite frequently. So, Skype is used, and its features are emphasized to the staff in order to hold meetings as soon as possible regardless on the participants location. The company now uses Skype for meetings about the product portfolio because the whole Purchasing and Marketing department is not always present physically at the company, so Skype is a very useful collaboration tool.

4.3.4 Toggl

Toggl has been a great feature both for the Purchasing department and also the Marketing department. Managers can now analyse how much time it takes for each action. Also, managers can analyse the performance of each employee. It must admit that this collaboration tool is not very welcomed by employees as it evokes some kind of distrust towards their performance. Based on the data of Toggl, it is now much easier to predict how much time a certain project needs in order to be finished accordingly to the company strategy. This means that the product upload is done in the best possible quality in the time range set by the managers.

4.3.5 SIPOC - Second process

The following graph describes the main pillars of the process within the method of SIPOC. The description of these five aspects of the SIPOC table in terms of our process is to be found in section 4.1.4. This part demonstrates the significant changes which occurred after implementing the new communication tools. We can clearly observe that the Suppliers are very similar, however, as it can be seen in other parts of this thesis, it is possible to continue throughout the process without each person being in the company physically because the materials are to be found online. Input has changed dramatically because now there are no papers needed. The purchase department converts the orders to Trello, which is available for everyone to see, which means everyone can observe the current status of the process without asking anyone at all. This simplifies the task because it can be adjusted at any point in time thanks to the real-time feature of Trello. The process itself changed dramatically. A lot more work is done with the given communication tools such as mainly Trello, Slack, and sometimes even Skype. The product upload as a process is now more flexible, it can be done via home office, or anytime the copywriter decides to. Copywriter always has up-to-date materials. An important benefit of the new process in terms of SIPOC is the upload check, which simplifies the operations and increases overall performance. The performance is mainly increased by eliminating the need for long conversations discussing the current status of the product upload. The output is to be found always in Trello because it is copywriters' duty to mark the status once there is some progress. Also, the managers can always check the website if the statements in Trello are true. As for the customers of this new process, there are also some changes. Once the progress is recorded to Trello, neither the purchase manager nor the owner has the need to schedule meetings for this matter. They can check the progress 24/7 from their PCs, laptops, or even from their smartphones.

4.3.6 SIPOC Analysis

Suppliers	Input	Process	Output	Customers
Purchase manager, Warehouse, Marketing Manager, Copywriter	Online checklist of products	Trello communication, Product upload, Upload check	List of uploaded products on Trello, Products on the website	Buyers, Process owner, Marketing manager

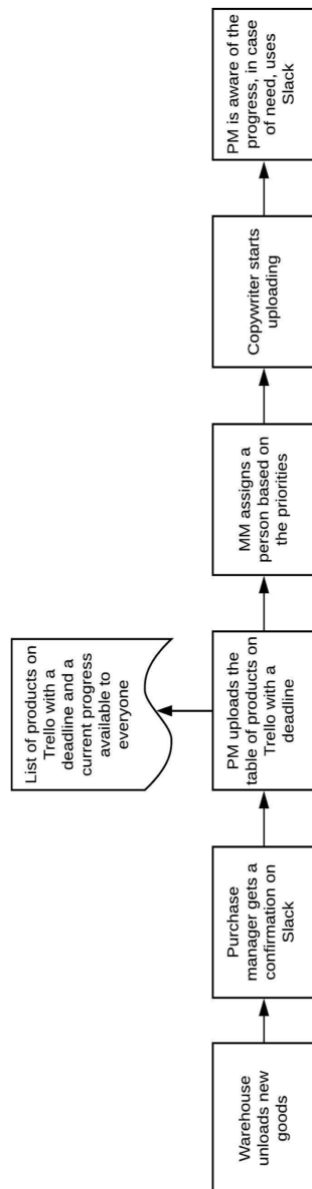
Source: Author

4.3.7 Flowchart of the second process

The reader can observe the process the second process described graphically via Flowchart on the next page.

It is apparent that the changes in the core of the process are significant. The process is a lot simpler than it used to be because everything can be found in Trello or Slack. The only barrier for this process to be an organization standard is its first phase, which is actually converting the staff from the first process to the second one. Once the transition is done accordingly to the definition of the second process, it is a lot more effective. As it is graphically designed, there is no room for miscommunication. In the first process, there is a connection between too many people. The purchase manager has to talk to the marketing manager, he also has to give the documents to the copywriter, and all of them have to report to the owner afterwards. That is eliminated in the second process with continual progress check, which is to be found in Trello. The last main benefit within the graph is the fourth step, which is very important. The Purchase manager creates a card in Trello with a list of products, once the list is created, the Marketing manager is alarmed, and he assigns a person to that particular card. This step is crucial because the Marketing manager knows the capacities which his subordinates are having at the moment, unlike the Purchase manager, whose goal is only to hand over some task. As there are more copywriters in the company, the MM knows the best who is capable of completing the card in Trello as fast as possible. The last part of the graph symbolizes a situation, in which the copywriter is too slow regardless of his other tasks. In that case, the purchase manager uses Slack to resolve the issue, unlike in the first process in which the PM would go to the whole marketing department furious about the current situation.

4.3.8 Flowchart of the second process graphically



Source: Author

4.4. Comparison of the process

4.4.1 Description

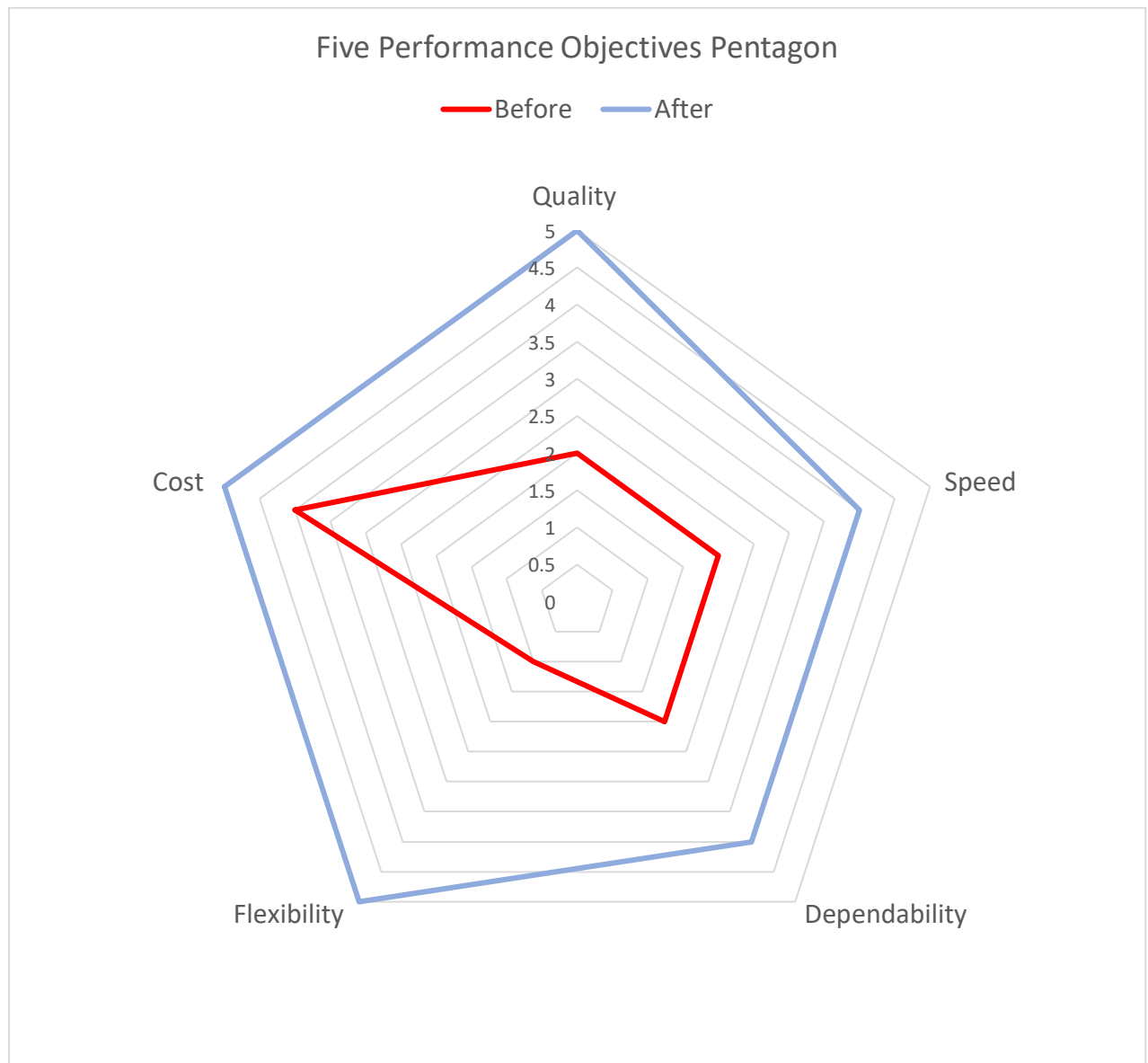
The comparison shows us the most crucial changes in terms of operational management. The comparison explains that the changes proved the tools to be useful in terms of communication improvement. The first process creates lots of communication barriers which are eliminated by the second process. The barriers are, for example, the need of all people involved when it comes to a dispute. Once the documents and messages are in online history or marked in Trello, there is no need for a big meeting to come to a solution. One of the main advantages of the second process is that the documents and the communication is always online, therefore accessible from any computer or a smartphone which is allowed to see the data. This access is usually granted by the owner or the managers. As they can see everything regarding the product upload, they can forecast how much time it will take for the process to be done, and therefore, it is much easier to prepare an accurate workload balance for all employees. With the second process, time management can be more precise because managers see what the employees are working on at the moment, and hence they do not need as many meetings, as usual, to be in control. It is important to mention that the impact of the implementation of these collaboration tools is immediate. As seen in the graphs above, there are some new barriers which come with the implementation of new technology. The reader can see that even - though the programs make communication faster and easier, employees become more dependent on technology than ever before. It is very clear that once the programs experience some significant changes, the company has to reorganize the whole process. Also, all of the participants of the process have to be trained in order to work with the collaboration tools effectively. Nonetheless, once some one of the participants decide to use the first process, the whole second process is immediately broken, and damages occur. This happens quite frequently as there are smaller batches of products. The purchase manager might decide to handle a small batch personally rather than virtually by Trello and Slack. Once this happens, there is chaos because nobody knows what the current strategy is - should the employees follow the old or the new methods? However, when there are regular meetings which tell people to stick with one and only process, which is the second one, these mistakes are slowly eliminated.

Once the company implements these collaboration tools, it is much easier to delegate and control assignments, which helps the company to meet goals more quickly and, therefore, effectively.

4.4.2 Five Performance Objectives Pentagon

The Five Performance Objectives Pentagon, which is to be found on the next page, provides the reader with a graphical representation of the changes which happened after the implementation of the second process from the Operations Management point of view. It is very clear that the first process represented by the red line is missing improvement, especially in terms of Flexibility. The change in rating encounters significant progress from 1/5 to 5/5. The digitalization changes which the company implemented showed great progress towards the highest possible Quality and the lowest possible Costs thanks to the modern online communication tools, which are for this particular company free of charge. However, it is quite apparent that the process is still quite dependable, more specifically on computers and the internet connection. In terms of speed, it is visible that there is still room for improvement. This improvement can be imagined as automatic creation of a list of products (card) to Trello as the goods are coming to the warehouse. This process would be, unfortunately, very expensive and, therefore, not achievable. However, for some suppliers, there is a scenario of faster product upload. It becomes a lot faster in the case when the supplier provides the company with perfect materials such as the product description, photos, and detailed parameters.

4.4.3 Five Performance Objectives Pentagon graph



Source: Author

4.4.3 Five Performance Objectives Table

The table provides a clear explanation of process comparison with the help of Five Performance Objectives. The table also addresses a ranking from 1 – 5 as 1 for the worst and 5 for the best. The ranking provides the reader with a more vivid picture of significant changes which occurred based on the transition from the first process to the second.

4.4.6 Five Performance Objectives Explanatory Table

	Before	After
Quality	<p>2/5</p> <p>The process lacks control and effectivity. It is not always done accordingly because some products are forgotten.</p>	<p>5/5</p> <p>The process is very well trackable and can be analyzed. There are rarely any errors. If they appear, it is only because of the wrong order of priorities.</p>
Speed	<p>2/5</p> <p>Communication only faces to face; some tasks are being forgotten.</p>	<p>3/5</p> <p>Communication instant based on the internet connection, speed of uploading stays the same.</p>
Dependability	<p>2/5</p> <p>The process of uploading is dependable on the Purchase manager without whom the process is undoable.</p>	<p>3/5</p> <p>The process is dependable on assigned people, computers, and internet connection.</p>
Flexibility	<p>1/5</p> <p>The process is very rigid based on the steps, paper based, and face to face communication.</p>	<p>5/5</p> <p>A sudden change can be done even on a smartphone in order to dismiss errors.</p>
Cost	<p>4/5</p> <p>Costs are increased once Purchase Manager disrupts Marketing department all of a sudden.</p>	<p>5/5</p> <p>The installation and usage of all platforms is completely free in the case of a company.</p>

Source: Author

4.5 Feedback from employees

As the person who was responsible for this transition, more specifically, process digitalization, I paid close attention to the reaction of all employees. At first, it took me some time to convince the management that the company would actually benefit from this transition. As soon as I got the approval for implementation, I started giving presentations to each department separately so I would tailor each collaboration tool to their preferences. It basically meant giving them a futuristic look that they would not lack communication, and every solution to a problem would be found in these tools as they perfectly saved the history of each conversation. As soon as I explained the basic concepts, I started showing them how it works in practice. For Trello, it meant setting the “card” in the right format; on the right part of the notice-board; assigning the designated person etc. Implementation of Trello was, I believe, the most difficult one. However, my colleagues are very smart, and they started using it immediately, and it showed terrific results. Now everyone from Purchasing and Marketing department knew the actions which were taking place in between them. As well as the other departments and the owner himself.

The feedback was very pleasant, even-though, it basically meant more work for everyone, thanks to the manual setting of Trello cards, people appreciated the clear results. There were some situations in which employees decided to resolve the situation verbally face-to-face, but these situations were quickly corrected by the manager. These corrections were necessary in order to keep the importance of the programs.

The feedback on Slack was very good as well, the company had no communication tool before that, so it meant they finally could exchange messages in real time. However, one obstacle was and still is, that Slack needs to be open as a separate tab in order to receive messages. It would have to be installed on the computer, and not everybody was willing to do that. It was the same with their own personal smartphones. I was surprised to find out that people do not like installing work-related applications on their phones. There is, of course, the fact that do not wish to work at night, however, there is the option to mute the application.

In terms of Toggl, employees were not very happy to start using it. They complained about losing their focus since they had to stop and resume everything they did on a separate tab of their computer. Toggl was by far the most fight-provoking collaboration tool of them all because employees solely believed that we do not trust them and, therefore, we have to time everything they work on. On the other hand, the aim was to make them a little more productive, there is no doubt about that, but the main goal was to establish a new performance system which would never overload one person and at the same time underload the other.

4 DISCUSSION AND SUGGESTIONS

There are many fights in between the employees and their managers only because people do not have clear and focused communication goals. Once the facts stay in the programs and not in the air, the unpleasant situations at the workplace can be resolved based on valuable arguments which can be found in the collaboration tools above.

The changes in the process are significant with the help of our smart technology, which is described in the second chapter of this thesis. Without everyone's ability to be connected over the internet almost all the time, this shift would not be possible. It is very certain that the smart devices mentioned above play the most important role, so without them, the second process would not be a solution. This impact of technology is also explained in the table below in terms of Dependability. There is also a human factor which is crucial for the process changes to be successful. Without the willingness of all employees involved, the implementation part would not be operable. However, I am pretty sure that even-though some people were against the digitalization changes, they soon understood that it was necessary to create new processes in order to make our lives less stressful. The stress is very often caused by a lack of communication between fellow employees and also a lack of control. People tend to forget very often, and with the help of smart programs such as Trello or Slack, they do not need to remember everything they spoke to their colleagues about. Trello became very popular and the workers started upgrading the usefulness of it to another level. Nowadays, they use it also for a web development and bug alerts. Basically, the whole company relies on the information from Trello.

For other companies, it is important to pick out situations which can arise during the whole process change for other companies. The problematic situations are described chronologically starting from the pre-implementation phase all the way to the post-implementation phase. At first, the person who is responsible for the whole digitalization process change has to pay a very close attention to detail when analyzing the internal processes of the company. They have to answer themselves questions such as:

- "Is it necessary for this company?"
- "Is there a probability that the changes will not be permitted?"
- "Are the employees technically equipped to handle such changes?"
- "Is there an employee who is responsible enough to keep the new process effective?"

The person can quickly realize that the changes are not the right fit for the corporation because for multiple reasons which arise after conducting an analysis based on the questions above. It might not be necessary for companies below ten employees because everyone tends to be in daily contact with each other. Sometimes, they even sit in one office, so there might not be a need for communication improvement. Despite the fact that the whole is present in the same office, some of the participants might get sick or might be on a business trip, and it might become a problem. The collaboration tools help to solve this problem from both sides. First, from the point of the managers, or in this case, the only manager can be the owner. Second, from the employee point of view because he or she can view the progress on their laptops or other smart devices. However, in the described company, it very often happens that one person

gives an assignment to another and after some time, they forget and the assignment is left unchecked. For this awkward and problematic occasion, Trello is a perfect helper which offers explanations and correct data about the dispute. Some companies might argue that they are working with the Kanban's method, which is the evolutionary change management method developed by David J. Anderson. It supports change in an evolutionary sense by successively optimizing existing processes (Leopold, 2015) with the help of leaflets which are placed on the board physically to monitor the stages in which the process is at the moment. The difference between Kanban's method and Trello are not significant based on the fact that it works on a very similar basis. Trello is, however, an online tool which is more practical because of its online interface. Employees can cooperate from anywhere in the world, and the information is to be found there 24/7.

Based on my experience, I strongly recommend other companies to try collaboration tools as well. Each tool has some benefit, which might increase productivity, overall effectiveness and wellbeing of the relationship between employees and their managers. This digitalization really helps in today's fast moving world in which more and more companies consider providing employees with home-office schedule at least once a week in order to maximize productivity and provide employees with more freedom and less stereotype. The digitalization proved to be a ground-breaking upgrade once the COVID-19 quarantine has been announced. Once the situation arrived, we were completely ready to send everyone, who works solely on computer, home and we kept in touch. Even-though the situation is still ongoing and therefore, it is too soon to evaluate the benefits of digitalization, we can proudly state, that the collaboration tools are helping us tremendously and we assume that the productivity of employees increased as they are working from their comfortable home.

CONCLUSION

The goal of this Bachelor thesis is to compare the change stages of the product management process due to the implementation of digital Collaboration Tools. The goal is achieved by implementing a research framework into the analysed company. The comparison of changes before and after implementation applies the Five Performance Objectives framework of operations management.

The practical contribution of the thesis is that the company obtains a measurement of implemented change and a methodology to assess the impact of future changes. Furthermore, the company learns from the assessment and has the opportunity to create improvements to the implemented change.

The academic contribution of the thesis is that the thesis evidences the implementation of Operations management approach on the development of e-commerce products. Additionally, the BT proposes a framework for the new virtual collaboration tools as a reference for other practitioners and companies.

Furthermore, the thesis describes the changes made within the company. The changes evidently show a positive progress, especially in terms of Quality and Flexibility in section 4.3. However, it is shown that the change is not perfect in all of the pillars of the Five Performance framework. It can be observed that in terms of Speed and Dependability, the progress is not as significant. This observation is based on the fact that the process as a whole is still very dependable. The dependability is caused by the need for the internet connection and a PC or laptop. Without these two necessary elements, the process would not exist. Also, in terms of Speed, the Speed factor is not increased dramatically because the upload of the process still takes the Copywriter the same amount of time, however, it is slightly improved by eliminating the need of the physical presence of the participants (or customers) for the process to work.

The reader is also provided with a graphical representation of the first and the second process by a Flowchart representation. The changes in the Flowchart design, or in other words, the process flow, are remarkable. The room for error is considerably decreased by the help of the collaboration tools. It is important to mention that the input and the output for Flowchart is the same, so the goal was to smoothen the process in between which was accomplished and is to be observed.

Furthermore, the reader can observe the changes in a table which uses the SIPOC analysis. The analysis provides the reader with clear definitions of the very details of the process. Once the details are specified, one can justify the impacts of the changes made by the digitalization. It is evident that the changes within the core of the process are crucial, thus simple to understand. Again, the reader can observe that the room for error is decreased as all the evidence is to be found online.

The Bachelor thesis also provides a recommendation for other companies considering the same process change, which is enriched by the experience of the author. The reader can also see the problems which can arise while preparing the implementation. It is surprising that each of the employees reacts to the first presentation differently, but once they see the differences, they actually see that it made the process less stressful. The thesis also includes a set of questions which every manager or the owner should answer before and during the implementation stage. Once these questions are resolved, the manager is then alarmed that it is

crucial to check consistently if the implementation was successful or not. It is mentioned in section 5 that if only one person denies to work within the second process boundaries, he or she will destroy the whole idea.

The practical contribution is that the company obtains a measurement of implemented change and a methodology to assess the impact of future changes. Furthermore, the company learns from the assessment and has the opportunity to create improvements to the implemented change.

The academic contribution is that the Bachelor thesis evidences the implementation of Operations management approach on the development of e-commerce products. Additionally, the BT proposes a framework for the new virtual collaboration tools as a reference for other practitioners and companies.

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