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## Increasing Work Efficiency in a Manufacturing Setting Using Gemba Walk

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Submitted 19/10/21, 1st revision 10/11/21, 2nd revision 22/11/21, accepted 10/12/21

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**Abstract:**

**Purpose:** This paper deals with the increasing work efficiency in the selected company. The literature review contains process improvement approaches in the field of increasing work efficiency. Implementation of lean production has brought continual improvement for manufacturers to remain competitive in the markets.

**Design/Methodology/Approach:** There is a case study and an analysis of the current state of the company that is operating internationally in industrial and professional electronics. Based on a practical application of a lean management method which is called Gemba Walk and the consultation with the employees, the result is the Ishikawa diagram and a priority matrix and evaluation results of these methods.

**Findings:** These results in the work served to suggest improving awareness and the importance of lean management in work environments. The case study is focused on the presentation of the proposed measures, the aim of which is to increase work efficiency and to motivate the employees to work more efficiently.

**Practical Implications:** The individual proposed measures will make it possible to reduce the time spent by the worker in carrying out his work. The work efficiency before and after the implementation of the proposed solutions is also calculated.

**Originality/Value:** The values for the company are the economic assessment of the proposed solutions, their time assessment, comparison of work efficiency, and the benefits of results. Benefits for the selected company are for example increasing the efficiency of work in the cutting room department in the company, minimization of the use of storage means, improving cooperation between picking and shearing, acceleration of the production process and reducing the risk of accidents at work and health problems.

**Keywords:** Enterprise, efficiency, Ishikawa diagram, Gemba Walk, priority matrix, process improvement.

**JEL codes:** D24, D61, O14.

**Paper Type:** Research article.

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## **1. Introduction**

The criterion which the manager applies to business problems is efficiency. The resources, the input, at the disposal of the manager are strictly limited. Process improvement is an activity through which key company processes are changed in order to increase its efficiency and performance (Ghalayini and Noble, 1996; Taouab and Zineb, 2019). Many studies have shown that business process improvement significantly increases productivity and cost savings (Crowe *et al.*, 2002; Terziovski *et al.*, 2003; Bandara *et al.*, 2005; Vergidis *et al.*, 2008; Siha and Saad, 2008; Ariyachandra and Frolick, 2008; Trkman, 2010; Houy *et al.*, 2010; Vishanth *et al.*, 2011; Aalst, 2013; Huang *et al.*, 2015).

However, not all process improvement efforts lead to increased profitability (Hall *et al.*, 1993; Macintosh and Maclean, 1999; Karim *et al.*, 2007; Siha and Saad, 2008; Abdolvand *et al.*, 2008; Keramidou *et al.*, 2013). The bearers of improvement processes are the employees of the company, who can, through their abilities, support positive changes in processes that they know in detail (Bakotic and Krnic, 2017). There are many reasons for improvement, including:

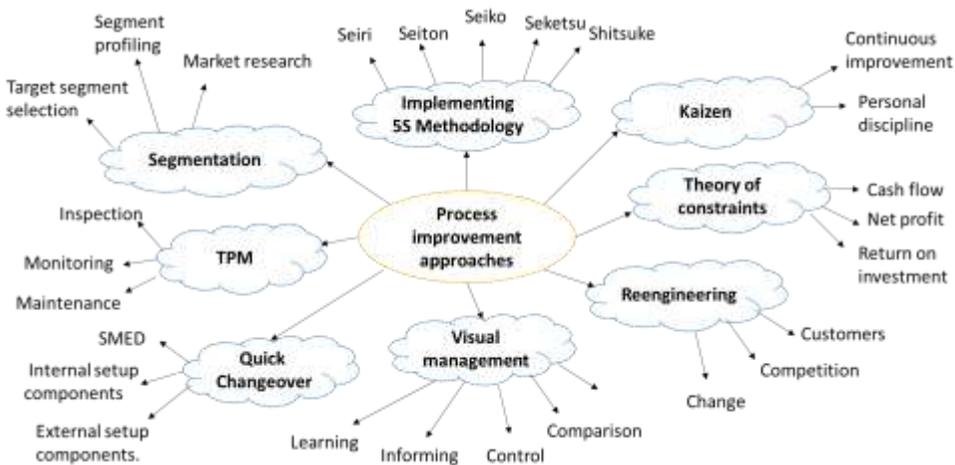
- the need to increase efficiency, effectiveness, or productivity,
- improving the operation of information flows,
- achieving employee satisfaction,
- reduction of conflicts between production, administration, and organization of production,
- efforts to facilitate work operations,
- elimination of unproductive activities,
- active involvement of employees in improvement.

Efficient implementation of lean production has brought room for continual improvement for manufacturers to remain competitive in the markets. Figure 1 shows the main approaches that lead to improved processes in the company. The selection of appropriate lean production techniques and practices to be adopted in the manufacturing system is a major challenge and must be addressed to ensure that Lean production can be implemented effectively (Košturiak and Frolík, 2006).

This paper deals with the increasing work efficiency in the selected company. The first section deals with a literature review in the field of increasing work efficiency. Within the second part, there is a case study and an analysis of the current state of the company that is operating internationally in industrial and professional electronics. Based on a practical application of a lean management method which is called Gemba Walk and the consultation with the employees, the result is the Ishikawa diagram and a priority matrix and evaluation results of these methods. The third part of the case study is focused on the presentation of the proposed measures, the aim of which is to increase work efficiency and to motivate the employees to work more efficiently. The final part deals with the economic assessment of the

proposed solutions, their time assessment, comparison of work efficiency, and the benefits of results.

**Figure 1.** Process improvement approaches



Source: Own study.

## 2. Literature Review

Constantly changing market conditions and the rising of intense competition have led to the shortened of product life cycles (Lim and Zhang, 2004; Van Bommel, 2011). This was in line with the increase of innovation and rapid development of new technology nowadays (Doolen and Hacker, 2005; Wei and Wang, 2011).

Process improvement is a process that changes key business processes in order to increase their performance (Birkhölzer *et al.*, 2008). The starting point for process management is the precise definition of the company's business processes (Hinterhuber, 1995). A dynamic element of process improvement is change. The quality level of changes and the number of changes are also very important. The success of process improvement can be expressed by the following relationship:

*Process improvement success rate = number of changes x quality of changes:*

The bearers of business changes are all employees in the company. The intention of process improvement is to actively involve as many employees as possible in solving problems, eliminating waste in the company. Process assessment can be seen as a means to involve and grow the awareness of process improvement goals throughout the organization (Lepmets and Ras, 2011). The organizational culture of the company is also very important, based on teamwork, readiness to change (Hammer, 2007), customer orientation (Reijers, 2006) and a cooperative leadership style (Hammer, 2007; Kohlbacher 2010). The increase of economic indicators, as well as the efficiency growth of economic and social factors, generates the largest

benefits from the implementation of work environment quality system in the enterprises (Bite and Zvirbule-Berzina, 2008).

As is known, one of the reasons for the change in working capital is the change in management efficiency, which affects working capital in a way that increases or decreases from period to period (Şen *et al.*, 2009). Efficiency is determined by the relationship between the outcomes that programs produce and the costs that are incurred in achieving such outcomes. Programs that are both effective and have low costs are the most efficient (Moore, 1995, Briš, 2010). Allocational efficiency is a characteristic of an efficient market where capital is assigned in a way that is most beneficial to the parties involved represents an optimal distribution of goods and services to consumers in an economy, as well as an optimal distribution of financial capital to firms or projects among investors. Under allocational efficiency, all goods, services, and capital is allotted and distributed to its very best use (Cejthamr and Dědina, 2010; Legát, 2013).

There is currently a relatively rare consensus among the managers of almost all our and foreign organizations in terms of what are the critical success factors (Nenádál, 2008). Lean management helps to align the production process with customer expectations and reduce waste while increasing efficiency. Depending on the specific organization, lean management in operations is also referred to as lean production, operational excellence or lean manufacturing (Nini, 2020). Effectiveness is the relationship between what could technically be produced and what is actually produced at the end of a production period (Trout, 2019; Mintrom, 2015). Shorten Processing Time (SPT) is a major trigger signal that drives manufacturer to adapt lean production (Yusup *et al.*, 2013).

According to the literature, a reduce changeover and handling time (Melton, 2005; Rahani and Al-Ashraf, 2012), a reduce setup time (Abdulmalek and Rajgopal, 2007; Shah and Ward, 2007; Nasab *et al.*, 2012), an improve production take time (Cuatrecasas-Arboš *et al.*, 2011) and a reduce throughput time (Rivera and Frank, 2007; Losonci *et al.*, 2011; Ab Rahman *et al.*, 2013) was stimulus to decrease customer lead time. Ability to react with these circumstances will bring the positive impact and valuable benefits for manufacturers to further compete in a competitive market environment.

### **3. Analysis of the Current Situation in a Company: A Case Study**

The selected company ranks among the internationally operating suppliers with around 2,700 employees worldwide. The company's activities are focused and cover the entire life cycle of professional electronics in the business segment, from the germ of the idea to development, production, repair, and service. As an international provider of electronic manufacturing services, it supports major global players in the manufacturing industry. The company's activities in Slovakia are focused on the installation of cable harnesses, installation of cables, and electrical distribution

cabinets. The company's portfolio also includes the installation of various printed circuit boards. The company is engaged in custom production, or other words ATO (Assemble - to - order). This means that assembly and production only start after the final order has been generated from the customer.

Therefore, the company does not produce for the warehouse and they have not even created any insurance stock in the warehouse. The advantages of this type of production include:

- orders are made according to customer specifications (pull system),
- no need to invest in materials and supplies and their storage (Low stocking),
- less risk of low finished goods.

However, this type of production also has certain disadvantages:

- risk of loss of sales due to low supply (Gregor and Mičieta, 2010),
- potentially longer delivery times for the production of goods.

Forward speed changes and vertical displacements of the centre of mass of the body inevitably accompany human locomotion, even when the average speed of progression is constant and the track horizontal (Cherrafi *et al.*, 2019).

#### **4. Implementation of Gemba Walks**

Several different methods have been described to measure the total mechanical work during walking. The technique described by Cavagna *et al.* (1976) was selected because it has numerous methodological advantages (Detrembleur *et al.*, 2003). The analysis of the current state of the company, a Lean management method called Gemba walk was applied. A Gemba walk or regular workshop visits are one of the best practices for identifying company issues and communicating with employees so that suggestions for improvement can be identified (Tyagi *et al.*, 2015; Romero *et al.*, 2020).

One of the key factors leading to effective Gemba walks is a visual and well-communicated plan that allows employees to expect a visit and not be surprised. Each visit to the company was announced and mediated in advance by the employees in the department. The first walks were purely informative, where there were no questions towards employees, but their goal was to observe individual activities and get acquainted with the production process and technical equipment. Gemba's walks also had the task of creating a relationship with employees to gain a sense of trust that was gained through direct interaction. Through further walks, Gemba's questions were answered by the workers as a result of the observed facts, and it was possible to create a diagram of causes and consequences, which is described in more detail in the chapter entitled Diagram of Causes and Consequences.

After consultation, we came to three basic problems of low efficiency:

- unrealistic standard time - the physiological needs of man are not taken into account, only the time of the machine is taken into account there (loss of about 10%);
- many products and orders have time taken into account in the department where the assembly is created, but in reality, the activity is performed at the cutting room - what should be done at the assembly is done in the cutting room and this greatly reduces their efficiency;
- it is not produced in stock - only the exact number is produced, i.e. workers are already cutting a certain type of driver, so they cannot create a certain insurance stock and often have to rebuild the machine.

## **5. Cause and Effect Diagram**

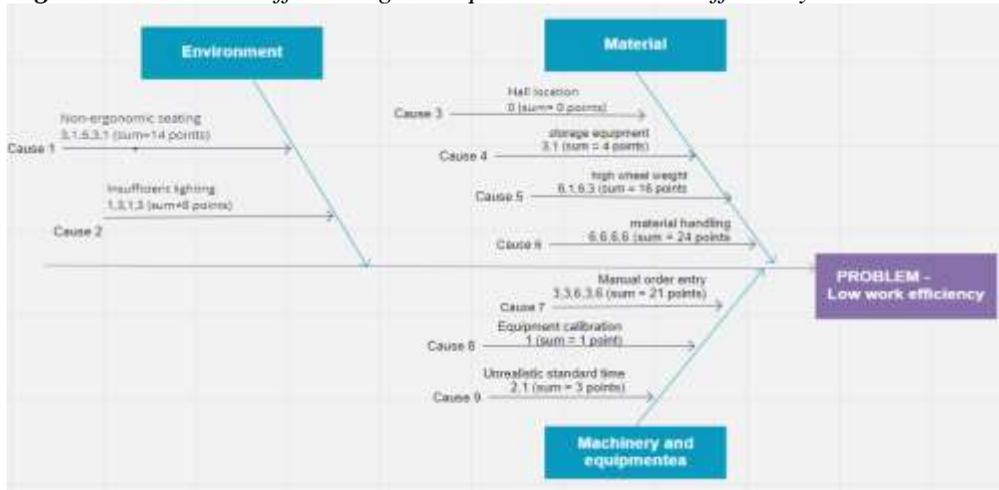
To determine the causes that cause low work efficiency on shearing machines, we chose an analytical tool called the cause and effect diagram, or Ishikawa diagram (Figure 2). The fishbone diagram or Ishikawa diagram is a cause-and-effect diagram that helps managers to track down the reasons for imperfections, variations, defects, or failures (Pearson, 2017). The tool helps to understand the "cause and effect" relationship when solving a problem. It is a very useful tool because it provides a pictorial representation of what is causing the problem or phenomenon, what factors are affecting these problems, and how the situation can be resolved. We specifically looked for the causes in 3 dimensions - material, machinery and equipment, and the environment. A solution team was created in the company, which consisted of employees of the shear department. This shear department works on a three-shift operation, with 3 production workers at each shift. The created research team consisted of 9 people who participate in the production itself.

The first step of the analysis consisted of identifying the main causes that cause low work efficiency in the company. Each member of the research team had the task of assigning three factors that lead to an undesirable situation in the company, a point rating, which represented the order of severity. The score consisted of points 6, 3 and 1. From the assigned points, a sum was created for the individual factors, which represented and determined the severity of each of them. At the same time, the severity of each branch was determined by the sum of the points of the individual factors.

The description of individual causes is as follows:

***Cause 1 - non-ergonomic sitting*** - a significantly longer period time is performed by the employee in the sitting position in front of the production machine. Expressed as a percentage, this represents about 70% of the work shift. Chairs at work tables are uncomfortable and particularly unsuitable for full shift work. At most, the worker can adjust the height of the seat, but nothing else.

Figure 2. Cause and Effect Diagram – problem – low work efficiency



Source: Own study.

**Cause 2 - insufficient lighting** - after setting the parameters and cutting the cable, the employee must perform a visual inspection of the first cut piece using a measuring device - a ruler, which is located at each desk. There is only the main lighting in the hall, which illuminates the production hall, but there is no other type of lighting on the work table that the employee could shine on the product, the length of which he must measure and check.

**Cause 3 – hall location** - the material is located in the same production hall where the production machines are located. It is located at a distance of about 2 meters to 5 meters.

**Cause 4 - storage equipment - input material** - reels with cables are stored in pallet racks located next to production machines.

**Cause 5 – the high weight of reels** - cables are stored and placed in reels on which they are wound. Their weight allows them to be handled only by means of storage means. It is often necessary to change these discs for a work shift, which significantly affects the employee's working hours.

**Cause 6 - material handling** - in order to be able to handle the reels on which the cables are wound, it is necessary to use storage means that allow them to be folded from a high height, but also moved to the machine due to their high weight. When using more efficient storage devices, it would be necessary to use storage means only when receiving the input material and the manipulation of the material in the production process would be eliminated.

**Cause 7 - manual data entry** - production machines are connected via peripherals to a PC and the employee must enter individual parameters via the keyboard into the software that is part of the company's machines via the data contained in the cutting slip. Because each order is unique, the employee often has to manually enter individual parameters into the software.

**Cause 8 - equipment calibration** - since there is no serial production within the company, but purely custom production and each order becomes unique, nothing is produced in stock. Due to the uniqueness of individual orders, it is often necessary to perform corrections and sorting of production equipment, which significantly affects the production time.

**Cause 9 - unrealistic standardized time** - a standardized time has been developed within the parent company, which, however, does not take into account the physiological needs of employees, such as the need to eat, drink, social needs, etc. Within the standard time, only the machine time is included, which reduces the efficiency by approximately 10%.

## 6. Creation of Priority Matrix

By solving the risk matrix, the research team came to conclusions on which corrective measures need to be addressed as a matter of priority. As is clear, the priority matrix shows that changing the type of storage facility appears to be the most significant remedy that will increase work efficiency and make work much easier for employees. Data entry automation, ergonomic chairs, and the addition of a light source were placed in the same place with the same sum of points. The following corrective actions (change the type of storage facility, ergonomic chairs, data entry automation, adding a light source) were designed and scored using a matrix of priorities (Table 1).

**Table 1.** Priority matrix

Corrective measures	Critical causes					Sum	Ranking
	1	2	3	4	5		
Change the type of storage facility	9	-	3	-	-	12	1
Data entry automation	-	9	-	-	-	9	2-3-4
Ergonomic chairs	-	-	-	9	-	9	2-3-4
Adding a light source	-	-	-	9	-	9	2-3-4

*Source: Own study.*

The score in the priority matrix was as follows (legend):

- 9 points - strong bond,
- 3 points - medium binding,

- 1 point - weak bond,
- 0 point - no binding.

## 7. Proposal for the Implementation of Corrective Measures

**Change the type of storage facility** - the company is supplied with input material in the form of reels on which the cable is wound. These discs have a high weight and can only be handled by storage means. Due to the high variability of orders, it is necessary for the employee to change individual reels many times for a change, which negatively affects his productive production time. In order to make this process more efficient, it is necessary to change the storage facility that is currently used in the company.

Pallet racks are currently used in the company for the storage of reels, from which if an employee wants to choose a reel with a cable, he must use a storage means, as these reels have a high weight. In order to speed up the handling of the discs, we propose to replace the classic pallet racks with drum racks, which will allow the employee to unwind the cables from the discs immediately into the machine and thus eliminate the use of storage means. This allows the employee to save time on handling and makes his work much more efficient. The following Figure 3 shows the current and possible future state of the unwinding solution into the machine.

**Figure 3.** Original solution (pallet rack) - new solution (drum rack)



*Source: Own study.*

Storing cable drums on drum storage devices has many advantages, including:

- save space,
- quick viewing of items in stock.
- each cable drum is located on a separate unwinding shaft,
- each shaft is equipped with a pair of galvanized steel centering pins, which prevents the risk of blocking by ladders and facilitates the unwinding process,
- in combination with the winding machine, it is the most productive organization for the production of cable cuts for wholesale and industry,
- elimination of the use of storage devices,

- reduction of damage to the cable harness due to handling.

**Data entry automation** - the employee receives information about the parameters of the cut cable through the cut tickets. These tickets contain information about the type of cable, the length of the cut cable, the length of the blanking, etc. It then enters this data into the keyboard via the keyboard software that is part of the cutting equipment. This process could be streamlined in 2 ways:

- by creating a database,
- using a wireless barcode scanner.

Both methods would need to be performed at the picking department, which prepares the documents for the cutting cards and prints them.

**Creating a database** - one way to streamline data entry into the software is to create a comprehensive database, through which the employee would not have to print data from the mailing list, but would select from the filled database the record he needs according to a unique number. The creation of the database would have to be done at the picking department. On average, a trained employee takes 30 seconds to manually enter data into the software; using a comprehensive database, this time could be reduced to 10 seconds, which represents 66.67%.

**Use of a wireless barcode scanner** - another way to make data entry into the software more efficient is to use QR codes, which would contain all the information contained on the editing ticket. A wireless barcode scanner (Figure 4) would be located at each workplace, through which the employee would scan the cut ticket and send information to the computer, which would be automatically filled in the software. Also, this method would have to be performed in the picking department. It takes an average trained employee 30 seconds to manually enter data into the software, using a wireless barcode scanner, this time could be reduced to 5 seconds, which represents 83.33%.

**Figure 4.** *Wireless barcode scanner*



**Source:** *Webmaxx.sk*

Benefits of data entry automation:

- allows you to reduce the error rate caused by human factors,
- facilitating the work of employees,

- acceleration of the production process,
- the process becomes more efficient,
- improving cooperation between picking and shearing.

**Ergonomic chairs** - the employee performs a large section of his work in a sitting position in front of the machine. Comfortable seating also affects an employee's overall productivity and efficiency. For the employee not to suffer physical pain due to incorrect sitting due to sitting on a bad chair, it is necessary to ensure a comfortable sitting (Figure 5). If the employee has optimal working conditions, his efficiency becomes many times higher.

**Figure 5.** The change of chair



**Source:** webmaxx.sk

Advantages of sitting on ergonomic chairs:

- improved worker health - seventy-four percent of workers regularly experience desk pain, which can lead to distractions, reduced productivity, and health problems;
- better work productivity - not only do non-stop chairs provide workers with health benefits, but they also make it easier to focus on work by reducing their stress. Focused employees are more productive employees - they have a better ability to react quickly and fewer mistakes;
- reduced business costs - workplace ergonomics reduces costs by increasing the focus and productivity of workers, but also preventing accidents at work and illness.

**Adding a light source** - the quality of lighting in the workplace can have a significant impact on productivity. Parameters such as heat, humidity, and airflow, lighting or noise determine up to 75% of the overall well-being of a person in the work environment. Under good lighting, workers can produce more products with fewer errors, which can increase productivity by 10-50%. Good lighting can also reduce errors by 30-60%, reducing eye strain and headaches, nausea, and neck pain that often accompany eye strain.

The level of lighting that workers need varies depending on the nature of the job, the visual acuity of the workers and the environment in which they work. For

example, detailed work, such as inspection, assembly of small parts requires a lot of light. After cutting the first piece of cable, the employee must check whether the cable has the required length or the length of unblocked parts. He performs this check using a ruler located on the desk (Figure 6). The lighting comes from only one central light, which is located above the employee and can be obscured by your figure. To eliminate this phenomenon, it is necessary to place an additional light source on each work table.

**Figure 6.** *Work desk in the company*



*Source: Own study.*

Good lighting in the workplace:

- reduce the risk of accidents at work and health problems,
- it will allow for better concentration and accuracy at work,
- a brighter and cleaner workplace leads to a more active and fun environment,
- will improve work efficiency,
- provides better visibility, better accuracy and faster work speed.

## **8. An Economic Evaluation of the Proposed Measures**

Based on the proposed measures, Table 2 contains an economic evaluation of individual solutions. The total amount of the proposed measures is 3374,40 Eur. The largest item in the total is a wireless barcode scanner.

**Table 2.** *Priority matrix*

<b>Product name</b>	<b>Number of pieces</b>	<b>Price without VAT (Eur)</b>	<b>Price with VAT (Eur)</b>	<b>Final price (Eur)</b>
Shelf for cable drums 4400 x 1100 x 1100 (mm)	1	745	894	894

Wireless barcode scanner	4	350	420	1680
Work chair	3	177	212,40	637,20
Table lamp	4	32,65	40,80	163,20
<b>Total amount:</b>				<b>3374,40</b>

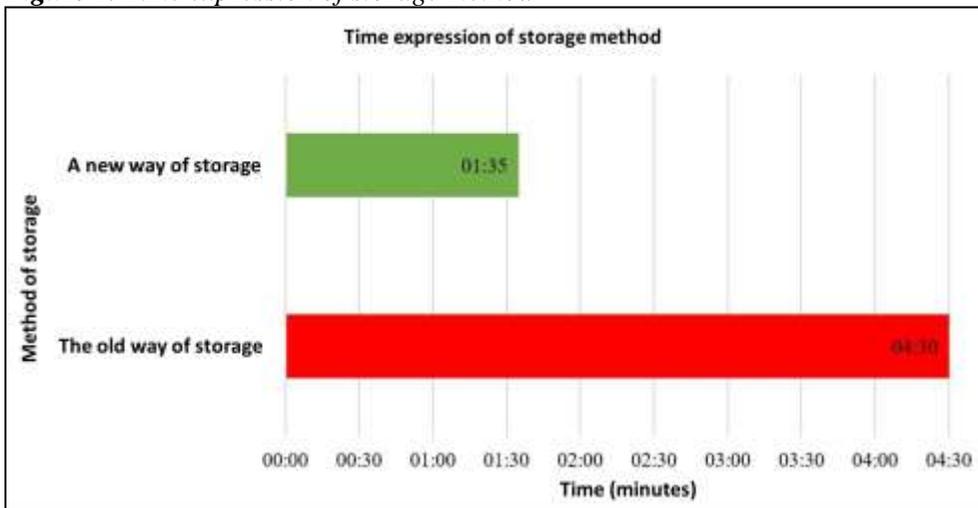
Source: Own study.

## 9. Time Evaluation of the Proposed Solutions

The individual proposed measures will make it possible to reduce the time spent by the worker in carrying out his work. The following graphs show graphically how the duration of the work will change and how much time reduction will occur with the individual proposed solutions. In the old method of storage performed by means of a pallet rack, it took an average trained worker to prepare a reel with a wound cable for an average of 4 minutes and 30 seconds (Figure 7).

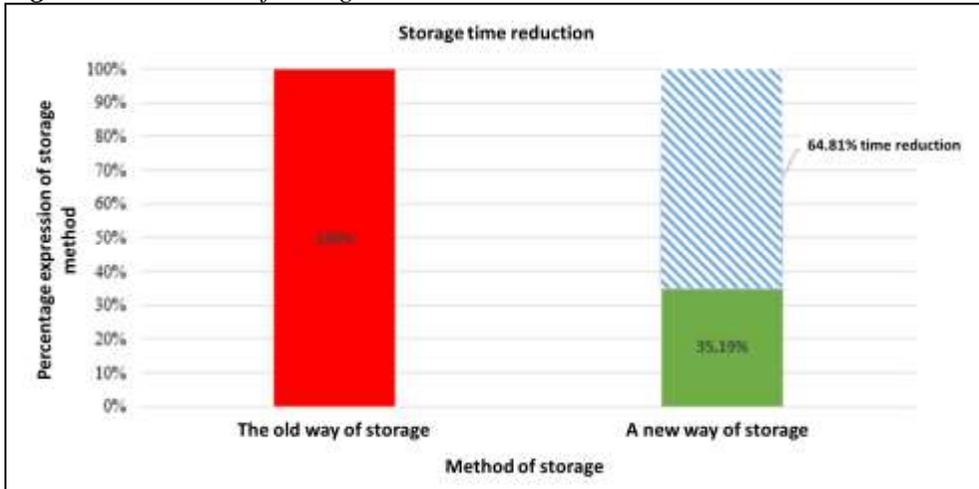
The process consisted of identifying the required roll, preparing the storage means, transporting the roll to the winding device, placing the roll on the unwinding device, and unwinding the cable to the cutting device. With the new method of storage, where the pallet rack is replaced by a drum rack, the time will be reduced and the employee will be able to perform the required process in 1 minute and 35 seconds. This shortens the process by up to 64.81%. (Figure 8). The process eliminates the need to prepare the storage means, transport the reel to the winding device and place the reel on the unwinding device since it is possible to unwind the cable directly from the given type of rack.

Figure 7. Time expression of storage method



Source: Own study.

**Figure 8.** Reduction of storage method time



Source: Own study.

When entering data manually, it took the average trained worker 30 seconds to print the necessary data in the software program. When entering data via a wireless barcode scanner, the employee will need 5 seconds to complete this process. This represents a reduction in time of 25 seconds and the process is shortened by approximately 83.33%.

When entering data through the database selection option, the employee will need 10 seconds to complete this process. This represents a reduction in time of 20 seconds and the process is shortened by approximately 66.67%.

### 10. Calculation of Work Efficiency

Work efficiency is the ratio of output to the input given in percentage form. In the calculation, we state the employee's working time per 1 work shift as an input, and as an output, we state the time when the employee performed his activity on the machine and cut the cables - added value.

Based on observations, the employee produced 98 orders per change and had to replace the cable reel 29 times. This represents 130.5 minutes of wheel replacement time and 49 minutes of data entry. After the implementation of the proposed measures, under the same conditions, the time spent replacing the disc would be 44.95 minutes and the data entry would take 8.17 minutes.

Current work efficiency before the implementation of solutions:

$$\text{Work efficiency} = \frac{270,5}{450} \times 100 = 60,11\% \tag{1}$$

Work efficiency after the implementation of the proposed solutions is:

$$\text{Work efficiency} = \frac{396,88}{450} \times 100 = 88,19\% \quad (2)$$

Benefits that flow from the proposed measures in the company:

- creating a new overview of theoretical knowledge in the field of efficiency and quality management,
- use and implementation of the proposed measures in the company,
- increasing the efficiency of work in the cutting room department in the company,
- possibility of implementing new knowledge for small and medium enterprises.

Benefits for the selected company:

- increasing the efficiency of work in the cutting room department in the company,
- minimization of the use of storage means,
- improving cooperation between picking and shearing,
- acceleration of the production process,
- reducing the risk of accidents at work and health problems.

## **11. Conclusions**

Applying a Lean Management approach in companies is not the result of following a standard implementation methodology, but of carrying out a specific analysis of the improvements that can be made, depending on their size and economic activity (Nösel, 2021). There are a number of studies that have dealt with the problem of measuring efficiency (Andersson, Mansson, and Sund, 2014). Something is effective only when it is effective. In other words: something is effective if it has a useful effect. Efficiency is the ability to act or produce efficiently with a minimum of waste, expense, or unnecessary effort.

Emphasis is placed on resources and the speed with which organizational goals are achieved. Improving the efficiency of individual employees as well as team efficiency can significantly reduce operating costs. Employees work best in a work environment that is positive and inspiring. Improved work efficiency can lead to better productivity throughout the organization. A work environment in which employees will perform work and perform important tasks is likely to promote motivation and positivity.

The main goal of the case study was to increase work efficiency in the selected company. The first part of the article contains theoretical background. Gradually, there is an explanation of work efficiency, productivity, ways to improve processes, and the overall efficiency of production equipment. The second part of the work focused on the analysis of the current state of the company. The characteristics of the company and the analysis of individual departments of the company and especially

the shearing department were performed. This part contains an informative procedure and a description of the production machines located in the cutting department with the stated technical parameters.

A diagram of causes and consequences was shown, which was carried out through brainstorming with the company's employees. Based on the point evaluation of the cause and effect diagram, measures were proposed and a matrix of priorities of the proposed measures was created. The proposed measures, based on the cause and effect diagram, were:

- changing the type of storage device,
- automation data entry,
- changing the chairs to ergonomic ones,
- adding a light source.

In the third part of the study, a presentation of the proposed measures was made, based on which the company will increase its efficiency. Also, for each solution, the benefits that the company will achieve by introducing them into business practice were stated.

The last part of the article was focused on the economic evaluation of the proposed measures. The total amount of the proposed measures is € 3374.40. A graph has been created showing how much each proposed measure affects the resulting amount. The largest item in the total amount is a wireless barcode scanner - 50% of the total amount. The following is a shelf for cable drums - 26% of the total amount, the third item with the largest share of the total are work chairs - 19% of the total amount, and the last item, which accounts for 5% of the total amount, are table lamps.

In this part, there is also a graphical representation of the time evaluation of the proposed solutions and presents how much reduction of time will occur by their implementation. The work efficiency before and after the implementation of the proposed solutions is also calculated. Finally, there are the benefits that flow from the proposed measures in the company.

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