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CONTENTS

Improving Business Processes by Applying the Kaizen Philosophy in a Macedonian Textile Company

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Abstract. This paper presents the research aimed at developing a solution for advancing of business processes in a Macedonian textile company, by implementing techniques and methods of the Kaizen philosophy. The main objective of the paper is to make a comprehensive analysis of the factors that enable the improvement of the overall production process, thus achieving greater effectiveness and efficiency in the production operations, as well as greater market competitiveness. The solutions were based on the concept of improving the efficiency of operations, especially in the area of organization of production operations, in a way that enabled complete elimination of errors, greater productivity and increased quality of the final product, within a precisely defined time frame. Additionally, the paper also shows the key elements from the implementation of the Kaizen philosophy in the process of competitiveness improvement of the company.

Keywords: Kaizen philosophy; management tools and techniques; business processes; textile company; business performance.

1. Introduction

The textile production is one of the best developed industries in RN Macedonia, but only with the application of the loan - system of work. The very process of organizing these processes begins with the signing of a cooperation agreement between the textile company and a partner company from one of the Western European countries. The partner company is committed to full and continuous supply of raw materials, textile, accessories and everything needed for a smooth flow of production, while the textile factory entirely organizes the production process – from the receipt of raw materials to the final control of the final product and its preparation for export and delivery to customers, Fig. 1.

The efficient operation of the textile company is a key factor in determining its competitiveness, which is a set of multiple external and internal factors [1]. The company cannot directly influence some of these factors, because they are determined by the environment, the business climate in the country and the global economic trends [2]. However, a good part of the factors that determine the competitiveness of the company is in the direct hands of the company itself, that is, its management [2]. One such factor is the efficiency and effectiveness of the day-to-day operations in the overall production [3]. Increasing the efficiency of this factor directly affects the efficiency of the company as a whole.

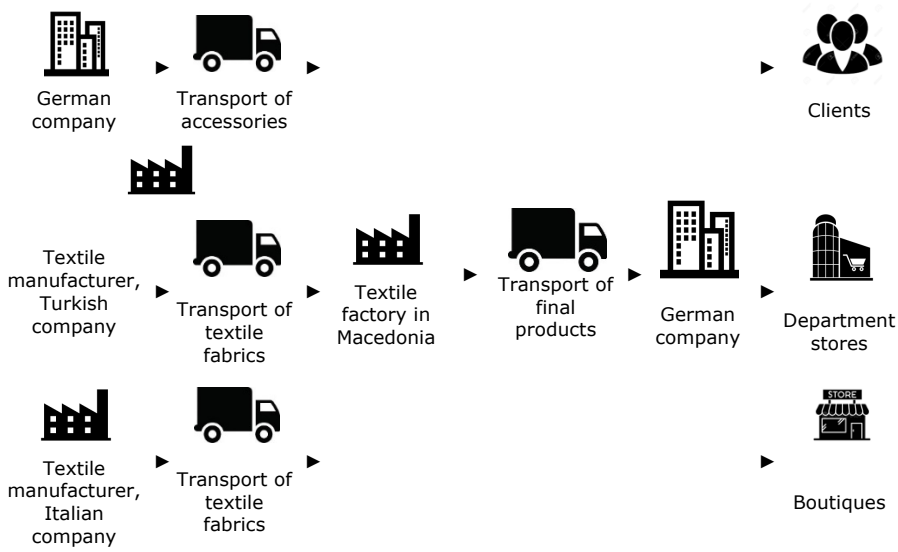

Fig. 1. Textile-loan production in RN Macedonia – starting with basic textile fabrics and accessories supply to delivery of the final products

There are several management tools and techniques to deal with this challenge, the best of which is the Japanese philosophy called Kaizen. It provides a systematic approach to workplace organization and is a sophisticated mix of organizational efficiency, competitiveness and organizational survival [2, 3]. Fig. 2 summarizes the organizational approach to the realization of business processes in the Macedonian textile organization.

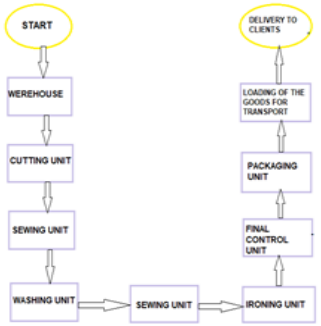

Fig. 2. Production flow diagram in a textile company
Source: Own sources.

The main topic of the research in this paper is to analyze the factors that determine the improvement of the operation of a Macedonian textile company and its competitiveness through the improvement of business processes in all aspects. The aim of the research is to determine the benefits and results of the adoption of the Kaizen philosophy and its methods and techniques, which are of strategic importance for continuous success in the implementation of business processes [3, 4].

2. Literature Review

Competitiveness of a company is the ability to produce a product or service that meets international standards accepted by the international market, while ensuring sustainable growth and well-being of the employees [5]. Competitiveness of a company is achieved by constantly increasing productivity which results in higher profits, wages and development, increased domestic income, constant quality and innovation in operations, acceptance of new technologies, information and connection to the world and economic operations [6] [7].

The organization of the work has a key role in the whole process of improving the business processes and the competitiveness of the company [8]. The management of the company must review and establish the organizational and business processes in a new environment and at a higher level [9]. It is extremely important to establish modern work management and separation of the managerial and ownership functions and to accept new methods and techniques of work which will include all employees [10].

Hence the need to create a concept for total quality management in all segments of operations, its planning, control, improvement – all in order to create a top-quality product or service that will meet and exceed the needs and expectations of the market [11].

Kaizen is a Japanese philosophy that is a set of tools and techniques to improve the quality of business processes, products and services [12]. The Japanese philosophy is based on small and continuous process improvements, which increase the efficiency of the organization and production and achieve greater results, by including all members of the organization, regardless of their hierarchical level, without making large capital investments [13, 14, 15].

3. Data and Methodology

This methodology starts by taking the initiative by the management or the management structure of the company for use of modern tools and techniques for quality improvement in order to achieve the planned objectives [16]. The main reasons of the management are the large percentage of defect pieces of the final product and the quantitatively insufficient number of finished pieces in a precisely determined time frame [17].

The implementation of the preparations for the activities begins with the establishment of teams for improvement, problem detection and selection of Kaizen techniques. This is followed by defining a plan of activities and setting an objective and projection for the outcome of the planned corrective measures [18]. Quality control tools and techniques are used in order to set measurements at the critical points, where results are monitored and ongoing control is set [19]. After receiving and analyzing the results, an internal analysis is made and the business process are standardized. Finally, the self-assessment method is used to make the final assessment of the results and outcomes of the designed and applied methodology [19] [20] [21], Fig. 3.

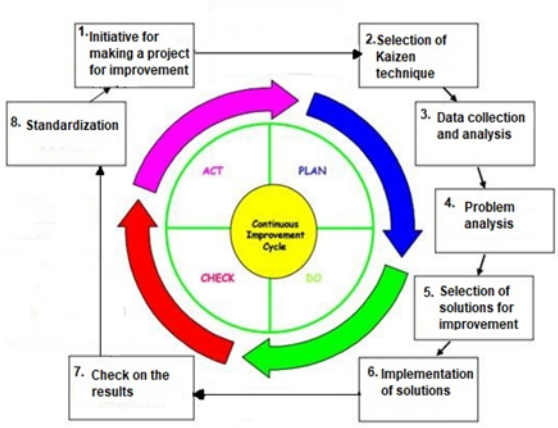

Fig. 3. Steps in implementing the Kaizen methodology [based on 17].

The distribution of activities when implementing the Kaizen strategy starts from the top management which is responsible for its introduction, allocation of resources and determination of policies and objectives for full realization of the concept [16]. Secondly, the middle management is in charge of implementing the objectives set by the top management. This management level designs the operating procedures and trains the employees to apply the Kaizen and development of appropriate techniques and skills. Thirdly, the workers are required to apply all of Kaizen methods and techniques to which they are trained [15, 17, 20, 21]. A great discipline is required in their work as well as continuous education and self-development in order to better resolve all the current problems [21]. This will ensure continuous improvement, increased productivity and better quality of the entire production [14]. Further in this paper we show the application of the Kaizen methodology and its tools and techniques for improving the business processes and the quality of work in a Macedonian textile company. The main objective of the research is to increase the productivity and the number of final products with minimal errors and defects in the production. The benefits from the application of this methodology are presented through the analysis performed for the individual operations of the textile production.

4. Results

4.1. Implementing the Kaizen philosophy in a Macedonian textile company

The Macedonian textile company based in the city of Shtip was founded 20 years ago and with its production and the established reputation is a real success story on the Macedonian market. With its modern production facility, modernly arranged plants and warehouse space as well as specialized machines for production of men's fashion pants, the company successfully does business and is already well known at the textile fairs in Europe. New fashion trends, international standards and customer requirements, as well as the shorter deadline for production and delivery of the finished product, inevitably impose the need to improve business processes and improve all segments in the textile production. The company's management made a strategic decision to adopt the Kaizen philosophy, as an effort of introducing new way of work and increase of the success performance.

The design and implementation of this philosophy in this company was realized through the following steps [17]:

- ***Step 1: Initiative for preparation of improvement project.***

The management of the company decided to take concrete steps by applying the technique of establishing teams for improvement. These teams are composed of members of the top management of the company, members of the middle management as well as representatives of the workers from each sector of the business processes. In that way, the company got the best picture of the internal state of affairs, in terms of what is good and what does not work, where are the impediments and which segment works properly. The main task of these teams was to develop an improvement project, to come up with a list of problems and to assess their impact and scope.

All business processes were identified and analyzed in which there is a need for improvement and betterment. After identifying the problems, the critical points and issues that need to be addressed, brainstorming was used as a management tool to generate ideas and possible solutions [12] [18]. Starting from the fact that every idea is a good idea, many ideas have been generated in order to solve the current critical points [12]. The ideas were coming from the management, but also from the people directly involved in the processes: brigadiers (persons responsible of the whole brigade/ sewing line, person responsible for cutting department, responsible person for warehouse, responsible person in the finalization department, technical persons, etc.).

After the end of the brainstorming meeting, the following key points were singled out which should be approached with an appropriate methodology, with aim to improve them:

- complete cleaning and arrangement of the warehouse space;
- arranging the machine part of the plant (sewing and cutting units);
- simplification of the work and organization of the unit for control and packaging of the finished/ final products;
- elimination of the reasons for the increased number of final products with defects/ defected garments in the production;
- production of a larger number of units/ pieces for a shorter period of time without defected pieces.

- ***Step 2: Selection of Kaizen techniques that have been applied in the improvement of the business process.***

The choice of the Kaizen techniques should be in line with the issues that require improvement. Given that the Kaizen philosophy is based on small but continuous changes in all processes and functions of the company that involve all employees in the organization, the success and improvement will definitely happen. This paper also elaborates several business processes which were pointed out by the teams to be improved with the application of appropriate methods and tools from the Kaizen philosophy [18].

a) Complete cleaning and arrangement of the warehouse space.

To solve this problem, the 5S Kaizen methodology was applied, which refers to the organization and maintenance of the workplace. The 5S method is a set of rules and concepts for organizing the workplace of employees, in order to be neat and clean and easier to operate. 5S Kaizen is an easily applicable technique that is realized through the following stages [15] [16] [17]:

- sort (seir), which means: pick up or remove the unnecessary items, but also arrange and dispose of them;

- set in order (seiten), which means: arrange the necessary items for easier and faster use;
- systematic cleaning, which means: clean your work equipment, workplace and environment;
- standardize, which means: maintain a high standard of keeping your domestic and your own order;
- constant observance of the rules (self-discipline), which means: spontaneously maintain the objects and the environment without someone ordering you to do it.

The 5S Kaizen methodology in the company was realized by throwing out everything that is not needed in the warehouse space, including remnants of fabric rolls and rolls of interlining or lining that are small in size and pertain to orders that have been already completed. If their reuse is impossible, they just take up space of new rolls coming from new orders. Every roll was properly tagged with the number of the order that was showing where it is to be used and with the S-number of the customs import declaration for easier and more appropriate dealing in the processes of further production. The rolls were properly arranged on the shelves according to the order number, size, color, etc., in order to find them more easily when needed. Cleaning and arranging the accessories, although time consuming, was still an extremely important process for simplification of the search and finding everything you need at any moment.

International research says that employees lose half of the time allotted for work in search of what is needed [13]. In order to minimize that process, the first thing that was done was selection of the types of items, the material from which they are made, the quantity of the packaging, etc. Each item was separately selected and divided into accessories boxes, which are tagged with an appropriate code, order number and quantity. The tagging of the items was in the following order: necessary, critical, most important, unusable, not for use now and so on. The boxes were then stored on shelves for visually easier retrieval. With these procedures, more than half of the work was completed. Then it is up to the staff, responsible for the warehouse section, to maintain and arrange it on a daily basis, to dispose of the unnecessary items on a monthly basis and to take care of all the new goods that arrive - to properly distribute, select and order according to the already established principles. The self-discipline of the staff in this aspect of the improvement was essential for the successful implementation of the Kaizen philosophy.

b) Red tag

Identifying the unnecessary parts, tools or materials found in plants of an organization is not always an easy task. The employees and the managers are accustomed to the chaos. The use of the so-called red tag in the company, especially in the warehouse section, was a great way to identify all the unnecessary items that needed to be dislocated from the workplace. With the help of this tag, everyone else was informed that the tagged item should be evaluated [10], Fig. 4.

Fig. 4. Example of a Red Tag.

Source: Own sources

The implementation of the 5S Kaizen methodology within the unit for receipt and distribution of goods was completed by applying the method of visual factory, which provided normal working conditions in the company, that is, everything necessary for realization of the business processes was placed in a visible place. In this way, standards were created in the workplace, but also quick detection if something is out of the plan.

c) Arranging the machine part in the plant (sewing and cutting department).

The purpose of this segment was more efficient and effective operation, without interruption in the production process in the sewing department and the cutting department, by saving time (a worker on one machine waits while another worker on another machine finishes her part of the work) and increasing of the number of final products in a shorter period of time. In order to solve this problem, the management applied the SMED and OTED Kaizen methods. These techniques are performed sequentially, one after the other, and allow the tool/ machine change time to be reduced.

The SMED (Single Minute Exchange of Die), aims to reduce the tool change time to less than 10 minutes, and OTED (One touch exchange of Die) allows the tool to be changed with just one touch, that is, by pushing a single button [14].

In the textile production, there was no change of the tool but a change of the activities in the production processes from one type of machine to another. For example: the legs of the pants are sewn at one machine, and the leg seam is made on another. A third type of machine makes the belt of the pants.

All these operations were fully coordinated according to the minutes required for making each separate part of the pants, in a way that will provide for zero downtime, that is, no worker will wait from another worker to do her part. Because only men fashion pants are sewn in this textile company, the principle and operations are almost identical in almost all models, with small differences in the number of pockets, decorative seams or some effects (which are additionally completed). Therefore, the layout of the sewing machines (by type of operation) could have been distributed and standardized, thus completely facilitating and accelerating the overall production. If we take into account that for the most important thing for the client is to meet the delivery deadline (between 2 and 3 weeks after receiving the raw materials and fabrics in the factory warehouse), then the reduction of the production time is extremely important.

The 5S Kaizen methodology is also applied in the production processes implemented in the cutting and sewing units. Cleaning the workspace in the facility and around each machine individually and on a daily basis is especially important. For this purpose, all waste that is generated every day was selected, separated and what could be reused and combined was tagged in separate boxes. It took only 15 minutes of less work (compared to the 8 hours of active work planned) for each worker to tidy up his/her workplace and waste. The management motivated its employees by rewarding them on a weekly basis. Most often, they were divided according to the brigades (sewing lines) in which they work, and the reward was appropriate to their needs: days off, extra working hours paid, cash bonus, etc. In this way, better and faster production was achieved, including satisfied and motivated workers, tidy and proper work space, and thus the time needed to make each model was reduced.

d) Simplification of the work and organization of the department for control and packaging of finished/ final products.

The department for final control and packaging of the final products is one of the key links in the entire production process. The further cooperation with the client after the products are delivered to the final destination depends on the quality of the work of this unit. Poka Yoke - Kaizen visual tool [17] – was implemented for implementation

and realization of as many final products as possible, without errors and defects and within shorter time of delivery. Its main purpose is to design a flawless or error-free process by removing all potential areas where an error may occur. The basic value of the Poka Yoke technique is seen when performing some tasks for the first time, making it impossible for an error to occur [12].

The application of this tool in the unit for final control and packaging of final products proved to be very effective. First, errors were identified, then appropriate norms and rules for control and manner of efficient packaging were established, which resulted in increased efficiency and time effectiveness of these processes.

e) Elimination of the reasons for increased number of final products with errors/ defect pieces in the production.

During the production, it can happen that some of the final products have some error or defect, which may be smaller or larger, technically permissible or not. However, the emergence of an increasing number of products with error inevitably leads to the need to identify the causes and resolve them. Following the detailed analysis, statistics and complaints by the client, the following reasons for this phenomenon were identified:

- "Heavy" or problematic material/ textile fabric to work with. Due to its composition, the fabric often causes a number of problems such as slipping through the machine, tearing, missed threads, factory stains, etc.
- All this causes delays or problems in the process of tailoring, and further in the process of sewing.
- malfunction of sewing machines or their parts due to irregular servicing.
- In order to achieve flawless operation without downtime and problems, the machines need regular maintenance and servicing.
- insufficient expertise and training of the working staff.

Due to lack of professional and qualified staff and increased workload (especially in the season when the clothes collections for the clients are made), people were employed but they were not sufficiently professional and capable of working without errors. The errors were inevitable, and the repair of the defect pieces cost much more time and money than the quality and continuous training of the staff.

To reduce the defect pieces of the finished product, it was necessary to prevent those pieces from happening in the first place. In the prevention, the management adopted the principle of Kaizen technique - Gembutsu, whose implementation means a detailed inspection and control of the following: textile (arriving directly from the supplier), inventory, machinery and tools before the start of the order [10]. Input control was realized in such a way that the textile is completely rewound and the possible defects, holes, missed threads or the composition of the fabric (which could cause further problems during production) were immediately detected. The machines and tools were regularly serviced, lubricated, leveled and the worn parts were replaced. Sometimes, for various reasons, significant time is lost for a specific sewing procedure, and the client is not aware of that at all. If this significant additional time is not included in the final price for the lohn - production of that item, then it is a net loss for the textile company. Gembutsu is the perfect tool for detecting exactly such things [3] [9]. For each order, detailed norms are prepared separately with a description of all individual operations, which can help to accurately determine whether there is some specific procedure in place and how much it should be evaluated.

f) Production of a large number of items in a shorter period of time without errors and damaged pieces.

The basic and most important objective in the textile production is to produce as many final products as possible in the shortest possible time, by observing all the

conditions for quality of the products and deadlines for delivery to the final destination - the client. Achieving this requires a perfect organization of the steps before and after production, and they do not depend on the textile company but on external factors, companies and associates. The course of the whole process takes place in the following order: The client orders the basic and auxiliary materials for the production from his suppliers. The materials arrive at the client and are then sent to the textile company that does the production. This includes a transport company that imports and exports the final products. After the customs clearance of the materials, they are taken to the warehouse unit of the textile company and from there the production process follows. In order to achieve the best results, especially in meeting the deadlines, the Kaizen strategy JIT (Just in Time) is the one that is the most appropriate [17, 18, 21]. This management strategy is based on aligning the orders of the basic fabric or accessories with the dynamics and production plans. Companies adopt and implement this strategy to increase efficiency, meet deadlines and reduce the risk of delays of the materials, thus automatically reducing the overall costs and the wasted time. In order to be able to successfully implement this strategy, a quality and reliable supplier is needed, which will continuously supply the company with quality materials and will fully adhere to the deadlines. That way the client does not have to pay for warehousing or to waste valuable production time waiting for the necessary materials. On the other hand, the suppliers have a continuous delivery plan, planned at least a month in advance and thus do not remain without orders and gaps in their work.

In the Macedonian textile company, such a management strategy is of exceptional importance, because it is a matter of very short and fast production and delivery deadlines, and at the same time significant financial savings are made, because the order equals to the quantity planned for production. Applying this strategy saves warehouse space, waste management and disposal. The only drawback of this strategy is the potential delay, defect or disruption of the supply chain.

The Macedonian textile company that is the subject of research in this paper established business contacts directly with textile suppliers from Turkey, which enabled direct import of the required material and even further reduced the production cycle time. The application of Just In Time in this part of the production process provided huge savings of time and financial resources.

4.2. Benefits for the textile company from the implementation of the Kaizen modern philosophy

The implementation of the Kaizen measures and solutions was carried out in full coordination with the management of the company, the improvement teams, the responsible persons of the individual sectors and all the employees. The solution was a set of measures and activities which referred to implementation and execution of the following work activities:

- daily coordination of the activities planned by the management and the responsible persons in the separate sectors/units: warehouse, cutting unit, sewing unit, ironing unit, finishing and packing unit and the unit for loading of the goods;
- preparation of a daily plan for work with specific work tasks according to a previously determined agenda;
- complete cleaning, arrangement and adaptation of the warehouse space and of the plant with machines for cutting, sewing and ironing;
- raising awareness and self-discipline of employees;
- proposals for improvement of the overall work activity and motivation of

the employees;
- continuous work in realization of the objectives aimed at achieving greater and better production with reduced costs and increased profits;
- continuous activity for finding new foreign strategic partners, clients and suppliers of materials;
- quarterly evaluations;
- modernization of the machine park;
- standardization of the work tasks.

Some of the activities of the working team in charge of implementing the Kaizen methodology were aimed at monitoring the consistent implementation of the measures and facilitating the implementation of the objectives. With the application of these measures, the responsible persons of the sectors started with greater preparations in order to carry out all the methods and tools determined according to the needs and expectations of each business process.

- ***Step 3: Analysis and control of the results.***

The Kaizen philosophy is based on slow but efficient and long-term changes in all segments of operations, so the first visible results can be expected in the long run after its implementation. It takes time for adoption and acceptance of the whole strategy by the employees, the management as well as the teams initially created for its design, implementation and realization. The effects of the application of the Kaizen techniques and tools in the Macedonian textile company were visible several months after the implementation and showed excellent results on many different levels.

Using the 5S Kaizen technique, the warehouse space was completely cleaned and arranged in a way that put the following things first: functionality and visibility, easy access and complete organization of the basic material: textile rolls, interlining and lining, Fig. 5.

Fig. 5: Warehouse view before implementing the 5S Kaizen philosophy
Source: Own sources

Each roll was re-examined according to its size, the order number to which it belongs and the correctness of the material (in terms of holes, stains, missing threads, fading, etc.). The unnecessary rolls were removed in a special waste compartment, leaving a large space for everything to be neatly arranged on the shelves and tagged according to the required markings. It took a little longer to clean and arrange the auxiliary material, as it involved large quantities of buttons, metal buttons, zippers, labels, hangers, threads, and other plastic or metal utensils. It was arranged in boxes, drawers and packages with appropriate tags for the order number, the S-number of the customs declaration, quantity and item code. It was decided to arrange the rolls together with the auxiliary material (those that belong together) for each individual item and thus significant time was saved in searching for it through the warehouse space. If it used to take several hours and even one working day to make all the

selections, to arrange the basic and auxiliary material for each subsequent order that is put into production, now literally in 30 to 60 minutes everything was selected and the process of tailoring of the order was started. Cleaning and removal of leftovers from old and non-functional sewing machines, worn-out packaging material, loading pallets, and debris from long-completed and delivered orders was also done. The warehouse space has become functional at the highest possible level and the employees are investing daily care in order to keep it that way – the materials arriving from the imports for new orders on weekly basis are immediately selected, tagged and stored at the appropriate place, Fig. 6.

Fig. 6. View of the warehouse following the application of the 5S Kaizen philosophy
Source: Own sources

The arrangement of the machine unit was aimed at obtaining the highest possible productivity and effectiveness in the time required for preparation of each individual operation in the textile production. With the help of the SMED and OTED tools, a scheme of setting up, arranging the machines in a chain/ brigade for a more rational utilization time was carried out. In order to optimize the work of the brigade (and yet in accordance with the number of production operations required by the model of pants) it was determined that it would be best to have between 18 to 22 machines (plus machines for intermediate activities, ironing, etc.). It takes about 30 employees to complete all production operations on an average complex model of pants.

First, 12 ordinary single needle lock stitch sewing machines were allocated in order to produce a straight stitch. These machines are mostly used because 80% of the steps are made on an ordinary single needle lock stitch machine. Among these machines, 3 overclocking sewing machines were placed - machines that serve to assemble the inner stitches of the pants, that is, assembling of the individual parts of the pants, then 2 double-headed machines for making the decorative stitches.

Next to these machines, each of the following machines were placed: a bartack sewing machine, double needle lock stitch machine, button hole machine, flatlock cover stitch sewing machine, feed of the arm machine, fixer press machine, ironing machine etc.

After the complete sewing process of the model was completed, the following phases were also organized: thread cleaning, control, ironing, final control and packaging according to the client's order.

According to the norm given by the client, daily production of 400 pieces was expected for a simple model of pants, while for more complex models up to 300 pieces.

After applying the Kaizen techniques for optimal sorting of the machines in the brigade, the production on a daily basis increased by 12%, so about 450 pieces of the simple model of pants were made per day, about 350 pieces of the more complex model were made per day.

The 5S Kaizen methodology for complete cleaning of the workspace was applied in the unit with brigades and sewing machines. This methodology continued to be applied on daily basis as an integral part of the work responsibilities. The effects of the implementation are that the space around the machines is clean, each worker takes care of her micro space and every necessary utensil or material is easily and

immediately available.

The application of the Poka Yoke method in the company led to finding creative solutions to avoid or detect manufacturing errors with almost no investment.

The application of these activities in the process of final control and packaging of the finished product proved to be very effective. First, the errors detected in the control of the final products were identified: the control was carried out in the order, as the pieces were finished in the previous production operations. With already established and prescribed measures and norms of what the final piece should look like, no time was wasted in changing them if the piece was in a completely different size.

A similar activity was also carried out during the packaging process. If the packaging was in low order, first all the pieces of the same size were packed in bags, then they were tagged with a sticky label that showed all the data, such as order number, model, item, size, etc. According to the sizes and the previously determined space, the pieces were packed in cardboard boxes. If the packaging was to be on a hanger, the principle was similar – first, a bag of each product was packed, and then the pieces were lined up on hangers and stands according to the number of pieces in each size. In this way, time is saved and efficiency is achieved in every activity. The only deviation was made if the manner of packaging was changed by the client and a completely new way of stacking and packaging of the final products was required. The likelihood of errors in the use of this principle was indeed very small and the efficiency and, above all, the time efficiency were absolutely improved.

The Implementation of the Gembutsu methodology enabled the company to work much more efficiently in the field of prevention of defected final products and to provide detailed description of all work activities with accurate time required and complexity of operations applied in the production process of each individual item. This procedure provided a detailed norm which affects the determination of the final price for production of that item. Thus, neither side was damaged in the calculation of the final prices.

Using the Kaizen JIT strategy (Just in Time) outstanding results have been achieved in the field of ordering the basic fabrics, interlining and lining directly from manufacturers and suppliers of materials, most of which are based in Turkey. The company needed more time to establish all the correlations, conditions and rules for cooperation, to establish all customs rules for direct import from Turkey to the RN Macedonia (for which the two countries have concluded a special agreement for diagonal cumulation) and to make the necessary selections of the materials or the textile. Since the client has determined in advance the collection of models that will be made for that season, and already has the exact quantities per model that he will need, it was possible to make accurate calculations from which model, which color, quantity and type of fabric will be needed. Then, a list of textile was made in an order according to the production term of the respective model and a delivery was agreed once a week for quantities according to the needs of the current orders. This way of work simplified the production from the aspect of saving time and finances for transport of the ordered textile from the supplier in Turkey to the client in Germany and then from the client to the manufacturer in Macedonia. At the same time, there is room for the possibility of quick replacement or further delivery of the textile in case of errors or defects in the fabric itself or in case of need to sew urgent orders. In this way, timely and accurate delivery of the textile was achieved, which means absence of downtime in production, which also means that for each order it can be specified exactly when it will be made and delivered to the client, and the benefits are mutual for both the client and the producer.

5. Conclusions

The results of the implementation of the Kaizen methodology in the textile company for the most part contributed to the improvement of the business processes in production, but also to improvement in all segments of the business processes and change in the way the employees perform the work tasks and obligations.

At the same time, the textile company continued with the process of continuous improvements in other segments, which were aimed at greater investment in quality and changing the approach of the employees in performing their tasks. As a result of the positive effects of the implemented measures and activities, a standardization of the processes in the execution of the following work tasks was adopted:

- regular selection, tagging and proper storage of all imported shipments of basic fabrics and accessories in the warehouse of the production plant;
- regular updating of the location of the machine park in the cutting department as well as continuous servicing of the machines;
- daily cleaning of the micro space for each employee and greater self-discipline and pro activity of the employees;
- direct import of textile fabrics is established from manufacturers or suppliers of textile from Turkey;
- defining of dynamics and plan of final control and packaging of the final products;
- observation and timely removal of the causes of defect products;
- achievements of the monthly production plans and objectives;
- plan and realization of contacts with new and existing clients.

As a result of the changes implemented in all production processes, the responsible persons of each unit began to standardize their daily activities and to implement greater coordination in their teams. Continuous corrections of the weaknesses in the teams are made, by rejecting all the unnecessary activities, which are not aimed at making progress and do not contribute to the creation of new values.

The introduction of Kaizen modern tools and techniques in order to improve the business processes in the textile production enabled slow but continuous changes at all levels and in all areas of operation. The awareness of the management and all the employees was growing in a sense that something is being done every day that should be fruitful, that will improve the work, productivity, efficiency and effectiveness and will make the workplace a pleasant place to work. In the end, that would result in increased profits and higher wages.

The adoption of the Kaizen philosophy in the company has led to full customer orientation, which is a key factor in the textile production for successful production, gaining of reputation and following of all current fashion requirements and criteria. Hence the need for continuous progress and change, small but significant steps in every segment of daily work.

The implementation of the Kaizen philosophy is expected to yield even greater results in the long run because, over time, it turns into a way of work that is accepted and approved by all employees and management.

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Aims and Objectives

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