



NORTH TECHNICAL UNIVERSITY

FACULTY OF ENGINEERING IN APPLIED SCIENCES

CAREER OF INDUSTRIAN ENGINEERING

**SCIENTIFIC ARTICLE PREVIOUS TO OBTAINING THE TITLE OF
INDUSTRIAL ENGINEER.**

THEME:

**DESIGN AND IMPLEMENTACIÓN OF THE MANAGEMENT SYSTEM BY
PROCESSES TO IMPROVE PRODUCTIVITY IN THE LINE OF
PRODUCTION OF THREADS OF WOOL SHEEP OF TWO ENDS, AT THE
TALLER ARTESANAL TEXTILES TABANGO**

AUTHOR: PERACHIMBA FARINANGO JOSÉ LUCIANO

DIRECTOR: ING. MARCELO CISNEROS

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SCIENTIFIC ARTICLE

Design and implementation of the management system by processes to improve productivity in the line of production of threads of wool sheep of two ends, at the Taller Artesanal Textiles Tabango.

Author- Luciano Perachimba, Co-author- Ing. Marcelo Cisneros

Technical University Of Norte (UTN), Ibarra - Ecuador

SUMMARY - The present study was carried out in the Taller Artesanal Textiles Tabango, in which a proposal was developed to improve company processes, the application of the methodology of the management system by processes, will be developed with the aim of improving the productivity of the elaboration process sheep wool yarn of two ends of company.

The organization could effectively enhanced through of the management system by processes, which provide to direct and control processes appropriately, to meet or exceed the expected goals that allow to take appropriate measures to continuously improve the processes of an organization.

The project started with the development of theoretical bases which were used to perform research. Analysis of the current situation of Textiles Tabango, description of the manufacturing process lambswool yarn two ends and lifting the current state of processes is then performed. Subsequently raises the proposal of the implementation of the management system by processes, which it comprises design of direction strategic proposed for the company, identifying the processes by: design map of the processes, characterization of production processes. Having identified the processes are describes and details through diagrams of processes. For control of the processes was raised indicators of performance for process, which is detailed in of processes manual proposed. He elaborated the ishikawa diagram with the objective of identify processes critical of the company. Are described the implementation of corrective actions and improve critical processes identified. Next are described the implementation of corrective actions and improve critical processes identified. In the end it is done comparative tables before and after the improvements implemented of the elaboration process sheep wool yarn of two ends.

1. INTRODUCTION

The company Artesanal Textiles Tabango is in a market that has developed slowly in the production of sheep wool yarn two, three and four ends, where globalization and technology in machinery requiring employers to improve their processes in order to keep their market open and try to expand to new markets, thus arises the need to better meet the requirements and expectations of customers.

In the company Textiles Tabango where the study was conducted was evident that the processes of this organization are not well defined and standardized, are not managed in a proper way, that is not aware of their strategic objectives of the company, its mission, vision, policies, its scope, its inputs and outputs, so it was found that they are not properly defined each process.

And not having a system structured in a clear process originates disorder and uncoordinated processes and waste of raw materials, thus generating low productivity, and products that do not meet customer requirements by generating economic losses for the company. For this reason are raised design and implement the of the management system by processes to improve productivity and welfare of the company.

This project aims to design a model of the process management system to help manage entire organization based on processes. Seeks to solve problems in order to improve business productivity, efficient resource management, optimization of production processes.

2. THEORETICAL FRAMEWORK

SYSTEM

System is a set of interdependent elements oriented toward achieving a particular goal.

MANAGEMENT

Management is assume responsibility for the operation of a system, resource management is to achieve an object in time and cost pre-set.

Coordinated activities to direct and control an organization.

MANAGEMENT SYSTEM

A management system is a continuous process that allows maintaining and improving a certain system, through the fulfillment sequential of stages, he same that are in a cycle to be repeated recursively allow continuous improvement.

PROCESO

Set of interrelated activities or than interacting which transforms inputs into outputs.

Set of activities organized for get an end, from the production of an object or providing a service until the completion of any internal activity.

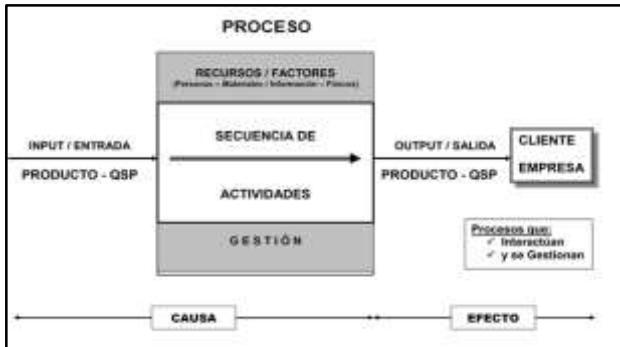


Figure 1: Process

Source: Pardo Álvarez, 2012

CYCLE PHVA

He cycle PDCA or Deming cycle consists of planning, implementation, verification and finally improvement actions.

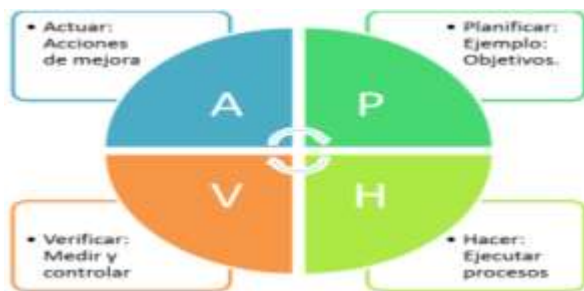


Figure 1: Cycle PHVA

Source: Pérez Fernández de Velasco, 2013

MANAGEMENT BY PROCESS

Process management is a systematic way to identify, understand and increase the value added of business processes to meet business strategy and raise customer satisfaction.

LIFTING OF PROCESS

For lifting and process analysis it is used a number of tools to diagnose and propose improvements that benefit the performance of the organization.

DIAGRAM SIPOC

SIPOC diagram, for its acronym in English Supplier, inputs, outputs, Customer is the graphical representation of

management processes. This tool allows you to view the processes in a simple manner by identifying the parties involved in it.

DIAGRAM OF FLOW PROCESS

They are graphical representations, supported by clearly identifiable symbols and accompanied by a brief description. Each step of the process is represented by different symbols containing a brief description of process.

DIAGRAM CAUSE EFFECT

The method is to define the occurrence of an undesirable event or problem, this is the effect, as the " fish head ", and then identify the factors that contribute to its formation, this is the causes and the " fish bones ", attached to the vertebral column and the head of fish.

PROCESS MAPPING

It is a graphical representation of a set of related activities under an established symbols. It is the identification of related business processes Management and Manufacturing Product / Service.

INTERACTION OF PROCESS

The interaction of processes It allows define the customer supplier relationship in the internal processes of the organization, identifying internal customers with their respective requirements, ensuring compliance with them, also enables process owners to give a follow established their processes through management indicators.

MANUAL OF PROCESS

The manual process is a systematic collection of processes that tells the company staff activities to be fulfilled, and how should be done.

PRODUCTIVITY

Productivity is defined as the ratio of what is produced and the means employed; therefore it measured by the ratio, results achieved between resources used.

STUDY OF TIME

He time study is a work measurement technique used to record the times and rates corresponding to elements of a defined task, work performed under certain conditions, and to analyze the data to determine the time required to perform the task according to a predetermined rule execution.

STANDARD TIME

He Standard time is the amount of time required to perform an operation, the calculation is only available after the entire process described above is to obtain and record information, break down the task and record its elements,

taking readings, calculate supplements the assessment factor.

INDICATORS OF MANAGEMENT

The term " indicator " refers to essentially quantitative data that allow us to realize how things are in relation to any aspect of reality that we want to know.

3. SITUATIONAL DIAGNOSIS OF COMPANY ARTESANAL TEXTILES TABANGO

Company Background Artesanal Textiles Tabango

The Province of Imbabura and Otavalo Canton especially after many years has been characterized by a major industrial and craft sheep wool processing, essential for making articles of clothing such as coats, caps, gloves raw material, and crafts as rug, etc.

Andrés Tabango Cachimuel from his 12 years was linked to this activity in the workshops of his grandparents and his father, where handmade learn various techniques of dyeing, yarn and thread enmadejado wool sheep wool. At 18 he gets his own craft workshop with 2 manual spinning and engine; Its production is sold exclusively in the community of Peguche to wholesalers.

Economic Activity of the Company

THE COMPANY ARTESANAL TEXTILES TABANGO is a company whose business Ecuadorian textile industry is the processing of sheep wool; under standardized production parameters and quality to meet the needs of the company and successfully meet the demands of the domestic market, wool is widely used for its elasticity and length reached (it can be extended up to 50 % of its length without breaking) which makes it especially attractive for spinning, pressing and braiding material.

Prioritization matrix FODA

MATRIX FODA OF TALLER ARTESANAL TEXTILES TABANGO	
STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> Differentiated products from the competition. Provision of direct customers in the área. Competition with reduced prices. Qualified workers with experience in the production área. 	<ul style="list-style-type: none"> Equipment with low technological level. Lack of business planning. Poor technical staff High level of inventory. Lack of incentives and motivation to staff.
OPPORTUNITIES	THREATS

<ul style="list-style-type: none"> Suppliers' of the matter proximity prevails. The High concentration of direct clients in the area. Growth of the national market. Improvements according to internal so much new politicians of the company like government. 	<ul style="list-style-type: none"> Competitors' number. Unsatisfied clients that have stopped to buy in the company Terms of credits to clients (high volumes of bills to charge to doubtful clients). It lowers substantial of exports of products without stopping of wool to countries.
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Table 1: Prioritization matrix FODA

Produced by: Luciano Perachimba

DESCRIPTION OF AREAS OF THE COMPANY

Storage área and matter reception prevails

He process in which the dirty wool is received or shorn virgin of the animal is sheep packed in jute sacks for her later prosecution.

Área of having shaken and dive

This process consists on assuring in a great percentage the elimination of the residuals or materials present strange solids in the dirty or virgin wool, since it is an activity of vital importance in the process of wool laundry for that which a process has settled down of having Shaken of virgin wool in which uses a machine wool abridora in charge of opening the wool fiber.

Área of laundry of dirty wool

It is the process of elimination of sludges that consists on the immersion of dirty wool in the laundry tanks and elimination of around 95% of the sludges.

Área of submerged to acid

This process consists on taking the wool washed by means of sacks to the deposit of washed wool and later on to place in a way adapted in the tanks of sulfuric acid, it is allowed to rest by means of a certain time for then to be retired of the tanks to proceed to take to dry off to the atmosphere.

Área of wool drying

This process consists on taking the wool washed by means of sacks to a clean place placing in a way adapted in a plane surface, spreading outdoors and to allow to dry off with the solar light, once spread the wet wool you proceeds to turn it so that it dries the wool well.

Área of charred

This process is carried out to eliminate solid residuals impregnated in the wool fiber.

Área Opening and shaken

This process consists on assuring the elimination of the residuals or materials present strange solids in the dirty or virgin wool, and to open the fiber of wool in an appropriate way, since it is a vital process for the following hilatura process, in which one is used it schemes wool abridora.

Área wool dyed

The process by which undergo operations dyed to give them the desired color, the hot dye solution is placed in contact with the tissue inside dyeing machine; introducing all these work in a metal wool Cuba filled with dye or paint the exact color is needed.

Área opening and mixed wool

Mechanical process in which by utilizing the wool opening machine, the material is open and is mixed with another color tinturada wool for obtaining different natural colors is performed by opening machine, also called Picket also It is used to mix the different colors to be obtained.

Área of carding Wool

It is the process of obtaining carded wool; from clean raw material to processing into yarn, endowed with finesse, more or less regularly in diameter and the effect of the resistance conferred retention; This makes using a set of machines called carder.

Área of Spinning

He area of Spinning comprises the whole of all operations by which they are subjected both natural and artificial fibers, to be transformed into homogeneous and resistant threads

Área do skein

Process involves the transformation of single or twisted orcoiled wire used to tangle with this form packages for rolls, takes place in the machine Aspe nominated.

Área Packaging and storage for finished product

The process by which finished skeins are placed and proceeds to pack the packages through the packing machine.

4. DESIGN OF THE MANAGEMENT SYSTEM BY PROCESSES FOR HE AREA OF PRODUCTION THREADS TWO PLY LAMBSWOOL, DEL TALLER ARTESANAL TEXTILES TABANGO.

Design of the proposed strategic direction for the Taller Artesanal Textiles Tabango

Mission

We are a textile company dedicated to the production and marketing of wool yarn dyed in natural colors that meet the

needs and expectations of customers, providing a quality product and excellent service.

View

Being a leader in the north of the country in the production and marketing of wool yarn in natural colors and dyed, meeting the quality standards, being respectful of the environment, achieving good business management and satisfying the needs of customers.

Strategic Goals

- Continuously improve the efficiency and productivity of the organization by 10% by improving production methods.
- Allocate 5% profit generating sales to promote personal and professional development of workers through training in all areas involving the organization.
- Meet needs and requirements of customers, improve product quality.
- Ensure product quality through compliance and quality standards.

Corporate values

Responsibility
Commitment
Respect
Honesty
Service
Teamwork

Strategies

- Make strategic alliances with potential suppliers of raw materials, so that guarantees quality and price.
- Make plans to biannual operational and administrative company staff training.
- Product positioning, through the creation of a sales or marketing strategy.
- Implement computer systems that allows for strict control and production monitoring.
- Promote customers the products we offer, by demonstrating the advantages of the product.
- Promote the company and products offered through media and Internet.

Policies

- Provide quality products to customers in order to meet their needs and expectations.
- Prevent and reduce occupational hazards of the staff of the organization through the provision of personal protective equipment and the adequacy of the work environment.
- Encourage motivation and participation, training and development of all staff of the organization for the welfare and success of the company.
- Regular assessments of the production process of the organization by performing continuous improvement.

- Prevent environmental pollution by improving their productive activities

DESIGN OF ORGANIZATION CHART PROPOSED FOR HE TALLER ARTESANAL TEXTILES TABANGO.

The development of positional organization, help the "TALLER ARTESANAL TEXTILES TABANGO" to identify those responsible for each of the processes, which should ensure compliance with the indicators of process management.



FUENTE: Levantamiento de Información Textiles Tabango
ELABORADO POR: Luciano Perachimba

Illustration 2: Structural organization chart Textiles Tabango

Produced by: Luciano Perachimba

MAP OF PROCESS OF THE TALLER ARTESANAL TEXTILES TABANGO

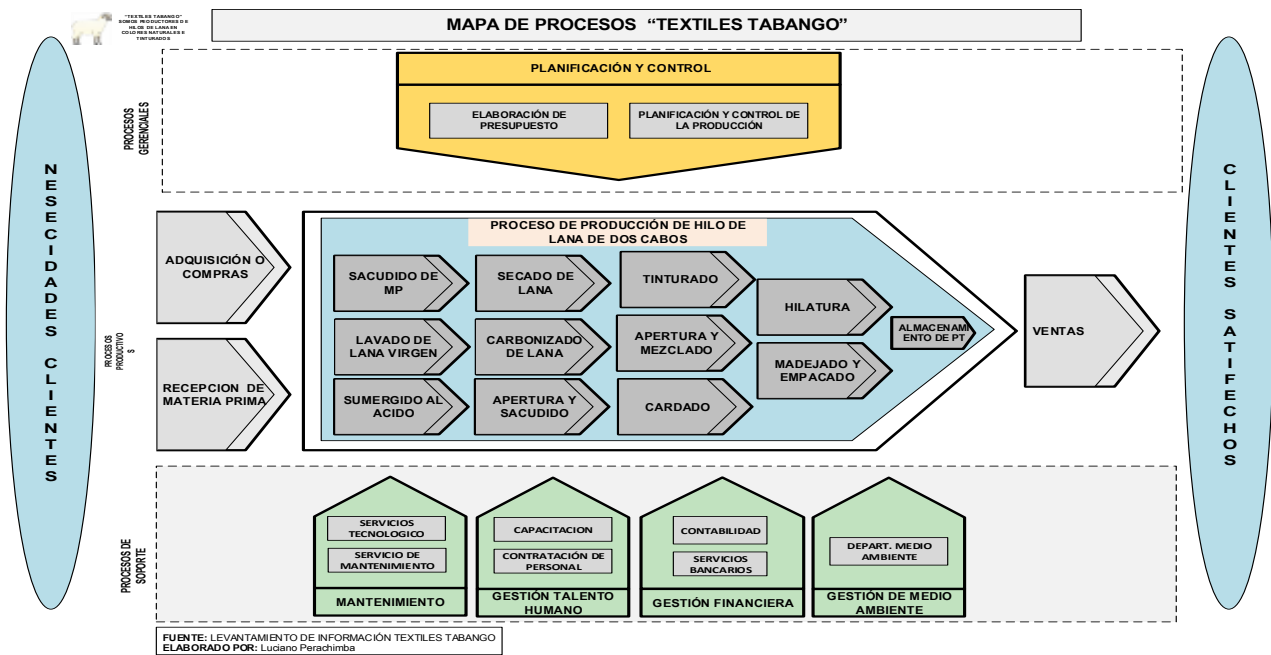


Illustration 3: Map of Process Textiles Tabango

Produced by: Luciano Perachimba

The mapping of processes, designed according to the processes performed by the company, and information provided by the owner of the company, this map will serve to get an overview of processes and threads in the ARTESANAL TEXTILES TABANGO, it is Management consists of processes Production Processes, Process Support or Support.

DATA ANALYSIS AND IMPROVEMENT IN THE PRODUCTION PROCESS, CRITICS IDENTIFIED

Identification of critical production processes

Based on the survey and analysis performed in the production process, by identifying activities, inputs, outputs, processes, under "II", he proceeded to make a comparison of each of the processes through the realization of flow charts of the current situation and calculating the cycle time of the production process, in order to determine critical processes, critical processes are identified according to the cycle time for which determined the slower cycle time determines the cycle time covering the entire production line system, such as washing area Sucia and spinning wool.

Action for improvement in the process of washing raw wool

Analyzing the wool washing process can be identified by direct observation to the company that there is low productivity in the process of wool washing, the problems caused by low productivity.

Due to the following problem:

Workers wash area dirty wool can not perform a task properly the wool washing process, on the ground that do not have the necessary equipment to transport minced raw wool.

Identifying causes and enhances problem using the Ishikawa tool.

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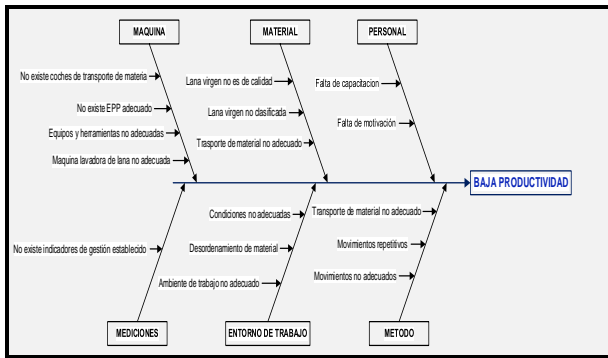


Illustration 4: Diagram Ishikawa process washing of wool

Produced by: Luciano Perachimba

Performing the analysis of cause and effect diagram in relation to the low productivity of the process of washing dirty wool, it was determined that low productivity is due to the lack of a freight car to transport wool.

Calculation of standard long-awaited transport activity of wool. "Without the use of a car load".

CALCULATION OF STANDARD TIME EXPECTED (Transporting 100 pounds of wool.)					
N ^o	ACTIVITIES	TYPE OF WORKER			EXPECTED TIME (Min)
		OPTIMISTIC (a)	NORMAL (m)	PESSIMISTIC (b)	
1	Worker displacement wool washing area in 7 meters when going to transport wool shake "no car"	3,87	4,48	6,34	4,69
2	Worker displacement wool washing area in 7 meters when transporting wool shake "no car".	5,89	6,81	8,08	6,87
STANDARD TIME EXPECTED (transport 100 pounds of wool)					11,55

Table 2: Calculation of standard time expected

Produced by: Luciano Perachimba

Improvement action in the spinning process

Analyzing the spinning process could be identified by direct observation to the company that there is low productivity in the spinning process.

Due to the following problem:

The spinning area workers can not perform in a properly transport activity of spools of thread on the grounds that do not have equipment and tools necessary to transport empty thread spools or terminated, so the lack of transport equipment generates more time on this activity, and thus increased the time cycle of the production process.

Identifying causes and enhances problem using the tool Ishikawa

In order to have a preliminary assessment of the current situation of the spinning process it has been developed causal diagram, which graphically located the main causes of the problem and delay giving effect to the decisions and declining profits of the company.

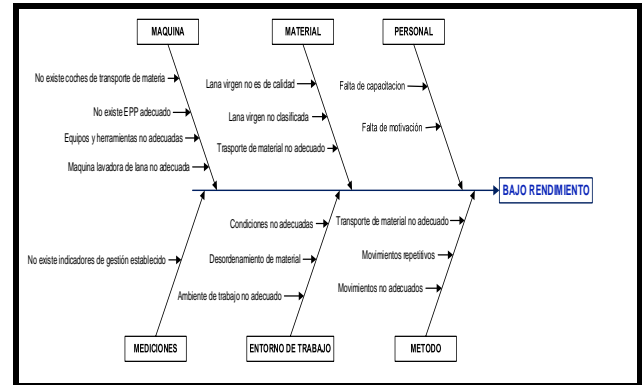


Illustration 5: Diagram Ishikawa process of spinning

Produced by: Luciano Perachimba

Performing analysis diagram cause related effects low area yield spinning could be identified that the variation in production is due to the lack of a freight car for transporting yarn packages, which generates greater production time, and low productivity of the company.

Calculation of standard long-awaited transport activity of twine. "Without the use of a car load"

CALCULATING THE STANDARD TIME MAKE A STOP					
N ^o	ACTIVITIES	TO (Minutos)	FV	SUPLEMENT	TS (Minutos)
1	Travel time worker spinning area 26 meters during transport activity coils in sacks.	4,54	1,08	0,20	5,88
2	Travel time worker spinning area 26 meters during the transport activity of twine.	4,67	1,08	0,20	6,05
TOTAL STANDARD TIME					11,94

Table 3: Calculation of standard time expected

Produced by: Luciano Perachimba

Calculation of the current productivity

$$\text{Cycle time} = \frac{216 \text{ minutes}}{40 \text{ pounds of wire "PACA DE HILO"}}$$

$$\text{Cycle time} = 5,4 \frac{\text{minutes}}{\text{pound of finished yarn}}$$

It employs 5.4 minutes to prepare one pound of yarn two finished ends.

Calculating productivity

$$\text{Productivity} = \frac{1}{\text{Cycle time}}$$

$$\text{Productivity} = \frac{1}{5,4 \text{ minutes/pound thread}}$$

Productivity = 0,19 thread pounds/minutes

$$\text{Productivity} = 0,19 \frac{\text{pounds}}{\text{minutes}} * \frac{60 \text{ minutes}}{1 \text{ hour}}$$

Productivity = 11 thread pounds / hour

Current productivity is 0.19 pounds of wire/minute, equivalent to a total of 11 pounds of yarn/hour.

5. PROPOSING AND IMPLEMENTING PROCESS IMPROVEMENTS CRITICAL IDENTIFIED

Analysis implementation areas

After the diagnosis of the current situation in the Production Process wool threads both ends of the "Taller Artesanal Textiles Tabango" and analyzing each production process could identify the critical process more time restriction. Which they are wool washing process and spinning process.

The implementation will be carried out:

- Socialization of the proposed strategic direction for the company.
- Changing working methods in the area of laundering dirty wool changes will be made to be the areas that take more time in the production process.
- New transport tool for raw wool in the wash area dirty wool, car transport equipment with a capacity of 50 pounds was implemented. With an acquisition cost of \$ 450 car.
- Socialization of proposed procedures manual for the production process of the company. At a cost of \$ 500.
- Provision of PPE for workers wool washing area. At a cost of \$ 240
- Acquisition of new degreasing tanks greater capacity for wool washing area. At a cost of \$ 350.
- Implementation of a car carrying spools of thread spinning in the area to transport and empty spools of thread finished. With an acquisition cost of \$ 1,800.

With this implementation it comes to reduced production cycle times, eliminating non-value added activities, reducing or eliminating repetitive motion, with improved working methods increase productivity.

Implementation in the wash area dirty wool

Implementation held in this area is a freight car to transport raw wool (wool) with optimum carrying capacity allowed greasy wool of a better way, which helped to eliminate

repetitive motion, and allowed reducing production cycle time and increasing productivity.

Calculation of standard long-awaited transport activity of wool. "Using a car load"

CALCULATION STANDARD TIME EXPECTED (Transporting 100 pounds of wool shake)					
N°	ACTIVITIES	TYPE OF WORKER			EXPECTED STANDARD TIME (min)
		OPTIMIST IC (a)	NORM AL (m)	PESSIMIST IC (b)	
1	Worker displacement wool washing area in 7 meters when going to transport wool shaken "by car"	2,73	2,85	3,18	2,88
2	Worker displacement wool washing area in 7 meters when transporting wool shaken "by car"	3,02	3,60	5,44	3,81
TOTAL TIME EXPECTED STANDARD					6,70

Table 4: Calculation of standard time expected

Produced by: Luciano Perachimba

Implementation in the area of spinning

The implementation carried out in this area is a freight car, and to assist in the transport of spools of thread, with a carrying capacity to enable optimal wire coils in a more appropriate manner, and thus eliminate transport operations repetitive, reducing production cycle time and increasing productivity.

Calculation of standard long-awaited transport activity of twine. "Using a car load"

STANDARD TIME CALCULATION A STOP "68 pounds"					
N°	ACTIVITIES	T.O. (Min)	FV	SUPPLEMENT	TS (Min)
1	Travel time worker spinning area 26 meters during the transport activity of car transport coils.	1,16	1,08	0,20	1,50
2	Travel time worker spinning area 26 meters during the transport activity of spools of thread on car transport.	2,50	1,08	0,20	3,24
TOTAL STANDARD TIME					4,74

Table 5: Calculation of standard time

Produced by: Luciano Perachimba

Improved productivity calculation

With the implementation of a freight car in the area of wool washing, to the transport activity of wool shake time it is reduced significantly decreasing the time of the area wool washing cycle.



Cycle time of the production line

$$\text{Cycle time} = \frac{188 \text{ minutes}}{40 \text{ pounds of wire "una paca de hilo"}}$$

$$\text{Cycle time} = 4,7 \frac{\text{minutes}}{\text{pounds of wire}}$$

It uses 4.77 minutes for the manufacture of 1 pound of yarn two finished ends.

Calculating productivity

$$\text{Productivity} = \frac{1}{\text{cycle time}}$$

$$\text{Productivity} = \frac{1}{4,7 \text{ minutes/pound thread}}$$

Productivity = 0,213 pound thread/minutes

$$\text{Productivity} = 0,213 \frac{\text{pounds}}{\text{minute}} * \frac{60 \text{ minutes}}{1 \text{ hour}}$$

Productivity = 13 pounds of wire/hour

Company improved productivity is 0.213 pounds of yarn / minute, giving an average day thread 13 pounds / hour, held in a turn or a worker.

Calculating the change Productivity

For calculating the variation of current productivity the following formula applies.

$$\text{Increased productivity} = \left(1 - \frac{\text{improved productivity}}{\text{current productivity}}\right) * 100$$

$$\text{Increased productivity} = \left(1 - \frac{13 \text{ pounds of wire/hour}}{11 \text{ pounds of wire/hour}}\right) * 100$$

Increased productivity = 18%

After the calculations have a variation of productivity of 18% compared to previous productivity by improving the activities of the wool laundry area. After the calculations have a variation of productivity of 18% compared to previous productivity by improving the activities of the wool laundry area.

With this we can determine that the improvement in the area of washing woolen craft workshop Textiles Tabago improved production company.

Calculating the production capacity a turn

A SHIFT PRODUCTION		
ASPECTS	BEFORE	NOW
Cycle time (Min)	216	188
Number of pounds of processed thread (lb.)	40	40
Cycle time (min/lb. Hilo)	5,4	4,7
Production capacity (min/lb. hilo)	0,19	0,21

Output per hour (lb. hilo/ hr)	11,11	12,77
Dairy produce (lb. hilo/día)	88,89	102,13
Monthly production (lb. Hilo/mes)	1956	2223

Table 6: Production per shift

Produced by: Luciano Perachimba

Calculation of the production capacity of the three shifts "24 hours"

PRODUCTION IN THREE SHIFTS		
ASPECTS	BEFORE	NOW
Output per hour (lb. hilo/ hr)	33,33	38,30
Dairy produce (lb. hilo/día)	266,7	306,4
monthly production (lb. hilo/mes)	5867	6740
Cost of a pound of yarn (\$/lb. hilo)	3,75	3,75
Total cost of yarn produced in the month (\$)	22000	25277
Total annual cost of yarn produced (\$)	264000	303319

Table 7: Production in three shifts

Produced by: Luciano Perachimba

The productivity of the company's 11 pounds of yarn / hour to 13 pounds of yarn / hour performing a worker was improved.

"Improving productivity as of 266.7 lb / day to 306.4 lb / day increasing the amount of 39.7 pounds of yarn / day in three shifts"

6. CONCLUSIONS:

- ❖ By collecting information about the theoretical foundations Process Management System, which served to help identify methods to analyze the current situation and strategy formulation processes to improve the organization.
- ❖ Are realize Organizational analysis of the company Craft Textiles Tabago, through the collection of information that evidencing the following:
 - By gathering information is evident lack of strategic direction, which has resulted in the staff of the company there is no commitment, loyalty, and above all they are not committed to their responsibilities in their production processes.
 - It has been made the lifting process of the through the use of diagrams SIPOC, which allowed us to know the whole process of the production line of the company.
 - It has been made A time study of each process was carried out, through the use of process diagrams which help to determine the standard time of each process.



- ❖ In the proposed of the design of the management system by processes are establishment the next:
 - By the analysis in the company Artesanal Textiles Tabango became evident did not have a strategic direction established, as, mission, vision and strategic goals, so they did not have well defined its purpose, a strategic direction was proposed and map of processes that allow all those involved in the management of the company to work towards achieving an end engaging and being responsible for the activities they perform.
 - A When performing an analysis of the production processes of the company could determine critical processes such as wool washing process, which set the pace for the entire production line, by identifying critical processes allows these improvements through improved production methods in order to reduce cycle time and make these processes more efficient.
 - The manual has proposed the standardization processes of each of the processes in which the different activities carried out who is responsible for them, checks to be performed, policies, management indicators, should be performed as reported activity so that implementation of this manual improved production methods company generating reducing cycle times and therefore improving productivity.
 - The indicators proposed in the manual processes will measure the effectiveness and efficiency of the production processes of the company and may take action based on the results, as it will allow the continuous improvement processes of the company.
 - ❖ With the implementation of the management system by processes, upgrade to in a meaningful way the productivity of the organization and process management that is focused on adding value to the organization and customers..
 - ❖ By implementing corrective actions in the wool washing process and the spinning process was improved working method thus shortening the production system 216 minutes / bale wire at 188 minutes / bale cycle thread, thereby improving the productivity of 11 pounds of yarn / hour to 13 pounds of yarn /hour, and increasing productivity variation of 18% compared to previous productivity by improving the working methods of the areas most critical identified customers.
 - ❖ By performing a detailed analysis after implementing process improvements and spinning wool wash the following results were obtained:
 - They decreased cycle time production system wool threads two ends 216 mins /bale yarn, 188 mins/bale yarn (40 pounds of wire each bale).
 - The productivity of the company's 11 pounds of yarn/hour to 13 pounds of yarn/hour, thereby improving productivity to date 39.7 pounds of yarn /day in three shifts was improved. Improving the monthly production is 874 pounds of yarn per month.
 - Improving income is \$ 149 / day and \$ 3277 monthly / month and an annual income of \$ 39,319 / year, with increased productivity 39.7 pounds of yarn a day.
- ## 7. RECOMMENDATIONS:
- S Socialize staff of the company on the implementation of the proposed of the management system by processe for the company in order to determine guidelines for the administrative and operational personnel of the company.
 - Implement the design of the management system by processes proposed by the company Artesanal Textiles Tabango, with the goal of continuously improving processes, control and reduce the variability of the process, so that the processes are stable processes.
 - Management must establish policies and procedures for carrying out the processes in an appropriate manner, so as to determine the guidelines for action and administrative staff, to serve as a complement to the effective development of each company process.
 - Based on the indicators proposed in the proposed manual processes, it is recommended to evaluate the efficiency of production processes in order to obtain results that help in making decisions, to analyze and continuously improve company processes.

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