Shipper Harmonization to Lower Machine Cost

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ABSTRACT

This project was focused in improve the packaging process and machine cost reduction, in this case a Case Packer by going to an harmonization process. The harmonization process will be performed to the case packing process in which the folding cartons (IFC) pack outs will be harmonize so the quantity of shippers used in the line can be reduced and also obtain a better quote when bidding the case packer machine.
Harmonization consists of adjustment of differences and inconsistencies among different measurements, methods, procedures, schedules, specifications, or systems to make them uniform or mutually compatible in which in this case the packaging process will be benefit because it can reduce the changeover process due to a less change parts used for the process.
To improve the case packer process and also to be successful in shipper harmonization process, the DMAIC methodology can be used. DMAIC is an acronym for a series of steps used to measure defects in business processes and improve profitability. The term DMAIC stands for the five main steps in the process; Define, Measure, Analyze, Improve and Control.
This project seeks to obtained a competitive alternative for the machine and also provide a reliable process.
DMAIC is a data-driven quality strategy used to improve processes. It is an integral part of a Six Sigma initiative, but in general can be implemented as a standalone quality improvement procedure or as part of other process improvement initiatives such as lean.

INTRODUCTION

Pharmaceutical companies have a lot of challenges due to changing in global expectations and competition between other pharmaceutical companies in which can provide or conquest the market with the better pharmaceutical products. This time now, they needs or have to focus in cost reduction, increment profits sales and customer satisfaction, but also maintaining and providing quality products to the customers. Also due to new political view and regulations for the Puerto Rico site companies is the competition among them and against since most of these companies are multinational and have plants around the world that can do the same work and can be their competition.

PROBLEM STATEMENT

During the Case Packer buying process and after reviewing the quotes submitted by different suppliers it was seen that machine cost were up high. In order to obtained an affordable price in which both can be beneficiated it was requested to find an opportunity in which the machine can be lowered without affecting the machine performance and also that complies with all the necessary requirements to it was intended for. After analyze what kind of improvement can be made it was agreed that an harmonization can be a solution that can satisfied the company in terms of machine price but also satisfying the packaging process.
With the reduction of quantity of shippers used at the packaging line, machine cost can be reduced due to a less quantity of necessary change parts required. In order of achieve this goal, a DMAIC methodology can be used in this project.

PROJECT DESCRIPTION

This project requires buying a new case packer machine to support packaging process but also satisfies the requirements and regulations for what's intended for. It is important that machine provides good to excellent functionality but also be cost-effective, increase customer satisfaction and delivered products in compliance.

RESEARCH OBJECTIVES

This project main objective is to achieve the best and cost effective case packer option and through the shipper harmonization activity it can be achieve. Also requires to provide an efficient and reliable system so the users can handle always following the require processes and regulations.

RESEARCH CONTRIBUTION

This project seeks to maintain a reliable packaging process while buying and install the best case packer option in which company is favor and also provides continuity in the packaging process. Shipper harmonization activities pretend to lower the case packer cost and also improve the changeover time by reducing the machine changes between lots.

GENERAL CONCEPTS of DMAIC

DMAIC is an acronym meaning for: Define, Measure, Analyze, Improve and Control. It is a structure, discipline, rigorous approach to process improvement consisting of the five phases mentioned, where each phase is linked to the previous. All of the DMAIC process steps are required and always proceed in the given order. DMAIC can be used to any improvement project or application. (See figure 1)

- **Define**: is where you will be setting project goals and boundaries based on your knowledge of your organization's business goals, customer needs and the process that needs to be improved.
- **Measure**: is to focus the improvement effort by gathering information on the current situation.
- **Analyze**: is to identify root cause and confirm it and see where the problem is.
- **Improve**: implement solutions that address the root causes and eliminate or reduce the impact of the identified root cause.
- **Control**: is to evaluate the solutions and the plan, maintain the gains by standardizing the process.

Figure #1 DMAIC

PROJECT METHODOLOGY

In a competitive world like the one we have, every organization needs to achieve the highest level. To sustain this competitiveness, each organization needs to have robust and reliable processes. The shipper harmonization in conjunction with this new equipment will provide a better and reliable packaging process; the DMAIC tools can provide the tools needed to obtain it.
At the **Define** steps the following tool will be used:

- Project Charter, is a statement of the scope, objectives and participants in a project. It provides a preliminary delineation of roles and responsibilities, outlines the project objectives, identifies the main stakeholders, and defines the authority of the project manager. It serves as a reference of authority for the future of the project.

- At the **Measure** step we search the packaging components used at this packaging line, in our case folding cartons and shippers, to have a better point of view of quantity of packaging components are actually used.

PROJECT METHODOLOGY

- At the **Analyze** steps the following tools a brainstorming following with fit test with the packaging components will be performed so best alternative can be obtain.
- **Improvement** will be implemented after successful fit test and analysis were performed and best solution achieve.
- **Control** will be determined during the project process according the previous steps results.

RESULTS AND DISCUSSION

The results obtained through the five phases of the DMAIC methodology follows.
Define – As part of the define phase the Project Charter was performed in order to determine the problem statement, the goal of the project and the metrics that will be defined. See Table 1

Table 1
Project Charter

Project Charter
Problem Statement: Case packer machine cost needs to be lower
Goal: By shipper harmonization machine cost can be lower due to a less change parts require

Measure – Data of what packaging components are actually used at the packaging line.
The results were showed below in Table #2 and Table #3 respectively.

Table # 2
Packaging Components

IFC Size	Shipper Size
75mm x 53mm x 97.5mm	18.8125(478mm) x 9.0625(230mm) x 4.0625(103mm)
75mm x 95mm x 113mm	13.5" x 12" x 9.5"
75mm x 70mm x 97.5mm	16-15/16" x 12-13/16" x 4-3/16"
75mm x 85mm x 113mm	18-1/4" x 13-3/4" x 4-9/16"
75mm x 70mm x 97.5mm	12.75" x 9.0625" x 4.0625"
75mm x 26mm x 113mm	12.375" x 7.125" x 9.125"
75mm x 26mm x 97.5mm	18.8125" x 9.0625" x 4.0625"
75mm x 89mm x 97.5mm	14-15/16" x 9-5/8" x 5-1/2"

Table # 3 - Formats

		Carton			Case		
Format	Shipper	a	b	h	L	B	H
1	Actual	75	53	97.5	477.8375	230.1875	103.1875
2	New	75	95	97.5	342.9	304.8	205
3	Actual	75	95	113	342.9	304.8	241.3
4	Actual	75	70	97.5	463.55	349.25	115.8875
5	Actual	75	85	113	342.9	304.8	241.3
6	Actual	75	70	97.5	463.55	349.25	115.8875
7	Actual	75	26	113	314.325	180.975	231.775
8	Actual	75	26	97.5	477.8375	230.1875	103.1875

Analyze Phase – After analysis and fit test we successfully agreed to harmonize to use just three shippers only. The results obtained are show in Table #4 and Table #5

Table #4 – Folding Cartons Size

Product	a [mm]	x	b [mm]	x	h [mm]
Format 1	75	x	53	x	97,5
Format 4+6	70	x	75	x	97,5
Format 5	75	x	85	x	113
Format 8	75	x	26	x	97,5
Format 9	75	x	89	x	97,5

RESULTS AND DISCUSSION

Table #5 – Shipper Size

Format	L [mm]	x	B [mm]	x	H [mm]
	Cases (Inner Case Dimensions)				
Format 1+8	477,8	x	230,2	x	103,2
Format 4+6	430,2	x	325,4	x	106,4
Format 5+9	465	x	366	x	118

Improve Phase – through the implementation of this new machine and after have achieved to reduce the quantity of shippers to be used at the packaging line, thus achieving a better price for machine which is one of the goals of this shipper harmonization process.
During the improvement phase we determine that we need to revise the packaging process
performed at the packaging line so we can improve it and not just obtain a better and achievable price for the equipment to be install but also provide a reliable process to the packaging operators and mechanic so the main and final goal for any pharmaceutical process is to give a quality products to our customers.
Also, as part of the implementation process, the voice must be kept that in order to maintain a good balance and standardization of processes, always look for the most cost effective way to provide any process and not only make implementations that look attractive, but that are also reliable.
Control Phase – The main goal of this phase is to establish and implement effective control to ensure that the identified causes are effectively implemented and maintain a standardization of components to keep the process in control. This will be achieved by always offering our clients as a main alternative what we already have and have implemented, unless there are particular requirements that are regulated. But not closing the door to alternatives proposed by our clients.
The harmonization can be seen in a certain aspect as something easy to carry out or implement, but the reality there are many factors that can affect this type of activity, as it can be packaging requirements of other markets outside of the American territory. Our task here is always to keep our process in control complying with what is established. The control is not only based on what I want to be done, but also in many cases it must be taken into account that particular requirements can be met and analyzed if they are profitable.

CONCLUSION

The shipper harmonization activity is still on an ongoing process. The first goal of the project was lower the machine cost and thru shipper harmonization it was successfully achieved.
The second goal of the project was to reduce changeover activity and also it was achieve since by reducing the quantity of shippers and pack outs formats the quantity of set of change parts were significant reduce.
After this Shipper Harmonization activity some real benefits will be implemented to the process like:

- Less changeover time between lots
- Packaging process standardization
- Change parts cost saving
- Cost efficient packaging process

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