Arab American University

Faculty of Graduate Studies

Improving Two Key Processes at Global United Insurance Company Using Lean Six Sigma Methodology

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This thesis was submitted in partial fulfillment of the requirement for the master's degree in Quality Management

July/2020

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Declaration

I declare that this thesis has not been submitted to any other degree or qualification as this thesis has been completely done on my own. This thesis is a result of my own research and review in this topic, noting that used I have not used the sources without referencing the source of text.

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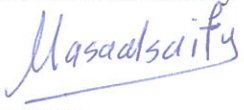
Signature: 

Date: 04/02/2021

Dedication

“In the name of Allah, the most beneficent, the most merciful. all the praises and thanks be to Allah, the lord of Alamin (mankind. jins and all that exists)”

Firstly, I would like to thank god for giving me the opportunity and bless me sound health, abilities and courage to embark on my master thesis and for completing this long and challenging journey successfully. The completion of this design thesis could not have been possible without desire.

I would like to express my gratitude and thanks to my supervisor Dr. Ashraf Almimi that guide me during the completion of this thesis.

Finally, this thesis is dedicated to my idol in life (my father), to the soul that taught me the meaning of loss (my mother) God rest her soul, to my eternal love (my husband) and my siblings that always support me during this journey either spiritually and emotionally. may Allah bless all of you.

Alhamdulilah.

Acknowledgment

I would like to thank the staff of the Faculty of Graduate Studies at the Arab American University for making my master study a memorable and valuable experience. I am grateful to my thesis supervisor Dr. Ashraf Almimi for his efforts, advice that helped me in achieving the objectives of this research.

Also, I would like to show my appreciation to all the staff of the for Global United Insurance company for their cooperation and assistance in the improvements project, especially the head of the car compensation department Mr. Bashar Khufash and the Assistant of Chief Technical Officer Mr. Salah Al-Mimi.

Abstract

Many companies and organizations have always sought to decrease the costs that are incurred from their operations as this will increase the profitability and decrease the available money that could be used for development. To be able to properly achieve this, the concept of Lean Six Sigma was created and is currently being used by many institutions worldwide in order to help them increase the efficiency of their operations, reduce variations of their products and services as well as eliminating the wastes within the different operations. Lean Six Sigma is an improvement methodology that provides institutions with a whole framework for making their processes more efficient and effective.

The importance of this study is to use the Lean Six Sigma to eliminate the inefficiencies and wastes in selected two key processes at Global United Insurance (GUI) Co., which is an insurance company that operates in Palestine. The goal for using Lean Six Sigma within Global United Insurance Co. is to expedite both the process of payments of invoices to the repair workshops as well as the process of repairing the damaged cars. The DMAIC methodology of Lean Six Sigma was used to achieve these goals where the processes were analyzed and the root causes for the wastes and inefficiencies were identified.

The data and information that were used for the analysis were collected via surveys that were conducted with the customers and the repair workshops owners. In addition, interviews were conducted with the different levels of staff at GUI in order to collect information on the processes as well as to obtain their impressions of the operations to understand the history of the development of these operations.

Several tools were used such as the Project Charter, SIPOC, Fishbone, Pareto Analysis Flowchart, 8 Wastes analysis, etc. to analyze the processes and identify the causes of the wastes and inefficiencies within the company. After the analysis was conducted a report was provided

with recommendations of the actions that should be taken by the management of GUI to develop their processes and make them more efficient. One of the main challenges that were faced was convincing the management of GUI to instate the changes and developments of the process. They were concerned that the staff will resist these changes as there will be major changes made to the processes and operations. Eventually, the management provided a promise that they will conduct the recommendations that were provided but in a gradual manner so that there are no extreme changes made at once within the company as they know what is best for the company.

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Chapter 1

Introduction

Introduction

1.1 Overview

Many organizations are interested in researching and studying the different ways they could develop and promote their services in the most efficient manner while assuring customer satisfaction as customer satisfaction is one of their main objectives since this will make the customers to continue using their services, (Abu Zaid, 2011). One of the main constraints that these companies might have is the resources that the companies have since they usually do not exploit all of their resources when placing a process for their operations. This is usually because they want to decrease overhead costs and decrease the steps within the service they provide as this will also decrease the chance of errors occurrence.

In addition, there are several factors that may make it difficult for the companies to control since these are usually variables that are not directly under the control of the company such as the attitudes of the employees, complications within the process itself (new to company problems), problems with the suppliers, etc. The best way to decrease these problems is by introducing the Lean Six Sigma methodology within the company as this will make processes more efficient and decreases the problems that may occur during the different processes of the company.

The quality of the services provided is very important as it is one of the main characteristics that the customers seek in any service that they want to acquire. Customers have a particular impression or benchmark of the services that they are acquiring, and if the quality of these services do not reach par this will cause disappointment within the receivers of these

services. The company must show its intent and good faith to its customers since this will cause a positive impression with the customers as well. Therefore, the company should instate new techniques and processes which develop the quality of their services. This has been a very important trend where even governmental institutions are looking into increasing the quality of their services and increasing the productivity of the different departments within the institutions. Regardless of the type of the institution, there has to be improvements in the communication between the different departments of the institution. In addition, increasing collaboration between the employees as well as assuring that the staff are satisfied with their work environment will strengthen the relationship between the staff and their management. This collaboration is critical for the smoothness of the operations and processes of the company and decreases staff rotation (Salah Eldean & Bartamani, 2018).

Lean Six Sigma methodology is important since it is the best methodology used to reduce time, costs, and errors in addition to making the processes more organized and efficient. This is important for companies since, if done correctly, it will assure more efficient performance by the company. This means that the customers should receive the services that they were acquiring in a faster manner, hence, leading these customers to be more satisfied (Summers, 2011). There are two parts Lean Six Sigma focuses on; the first is Lean, which focuses on removing wastes in the processes and usage of resources, and the second is Six Sigma, which concentrates on improving the quality of the process to assure that there are no obstacles or problems during the operations (Furterer, 2004). Together, the lean strengthens the links between the different steps of the processes and Six Sigma decreases the variables that are in these processes. Therefore, Lean Six Sigma assures the smooth flow of the operations within the companies as well as the continuous flow of the operations with no problems or obstacles (Summers, 2011).

Based on the above, applying Lean Six Sigma in private institutions, such as insurance companies, can improve the services they provide to their customers. Adopting this method should decrease the time needed for completing the different processes that are needed to serve the customers, such as the billing process, or any other service offered, basically by reducing the complexity of these processes which will eventually lead to decreasing costs.

The goal of this research is using Lean Six Sigma methodology in improving the processes within the Cars Accidents Department at Global United Insurance Company, as it is the most important department in the company and it has many problems from the viewpoint of senior management. The processes that are reviewed and analyzed are the bill paying process and the car repair process because these are the two important processes that the compensation department is facing some problems in them and is not satisfied with their performance. Applying Lean Six Sigma will identify and eliminate the wastes and variations within the processes of the department, to assure the efficiency of the operations of this department.

The intention of this research is to increase the efficiency, effectiveness, and the flexibility of the two processes which will eventually be reflected in increasing the customers' satisfaction as well as increasing the repair workshops owners' satisfaction.

1.2 Insurance Sector in Palestine

The insurance sector is one of the most important economic sectors in the world, and the system of any economy in the world depends on the safety of its financial system, especially the insurance sector because it provides economic protection for the human and material resources of the society.

The main objective of insurance is to compensate and protect individuals and enterprises from likely potential damage caused to them. During the last two decades of the previous century, the insurance sector saw significant development and renaissance in the economic market, particularly the global financial market, affected by the large shift in technology and industry. And with the advent of financial globalization, the growth of financial flows, which have greatly affected the insurance sector and its development, has accelerated.

Insurance began almost in Europe after the First World War and became a vital element in the modern economy, because of the gains and financial well-being of all the economies of developed and developing countries (Pearson, 2015).

According to SIGMA (insurance research, studies, and statistics institution established in 1960 in Switzerland), insurance activities in developed countries were growing faster than in developing countries. This is due to the better spread of the insurance culture in the developed countries, in addition to the high risk of investment projects implemented in the developed countries.

Palestine, like other countries affected by the renaissance and development of the insurance sector despite the weakness of the existing economic system, where the insurance sector in Palestine is newly established. With the Palestinian Authority in 1994, it became the legal authority to supervise the insurance sector, however, this sector remained suffering from lack of organization and management control over its work and the spread of the culture of insurance at the required level, which left the insurance sector weak and unorganized for nearly ten years, until the establishment of the Capital Market Authority, which became the official legal body authorized to manage the insurance sector, supervision and control (Mas, 2016).

The number of companies operating in the insurance sector in Palestine by the end of 2017 was

9 companies, all of them belonging to the private sector. The insurance sector grew by 18.7%, and the insurance portfolio reached$ 255.4 million until the end of 2017, the insurance sector's share of GDP is 2% for 2017 (PCMA, 2018).

As insurance companies are the main components of the economic system in Palestine and the stability of the insurance sector result in the stability of the economic situation as a whole, it is necessary to study the financial status of these companies and their efficiency in meeting their obligations when they mature, which is called the financial solvency (Daykin.et al, 1984).

The importance of studying the solvency of insurance companies has increased recently, because of the great competition witnessed by the insurance industry, and the management of the company, its shareholders, its employees, and the document holders are keen to continue the business of the company, and enhance its reputation and avoid any risks (Affolter, 2009), in addition to the attention of regulators to the financial situation of insurance companies.

1.3 Global United Insurance Company (GUI) Profile

The Global United Insurance (GUI) Company is one of the leading insurance companies in Palestine. It is a public shareholding company which was established by a group of businessmen who have a long experience in the insurance industry. GUI provides its services all over Palestine through its offices and agents who are present in all of the Palestinian cities.

One of GUI’s main goals is to provide its customers the best services possible, regardless of the changes in the economic and political changes that have happened locally or even regionally. The company assured to recruit and sustain highly-qualified and experienced individuals within the insurance industry, which is part of the company’s long-term strategic plan

by increasing its presence within the insurance industry in Palestine and increase the portfolio of its services to its current and potential customers.

GUI's vision is relying on its professional and highly-devoted team and distinct services to meet the growing demand for insurance services in Palestine. Therefore, they believe in partnering with their clients, where they will understand clearly their customers' needs so that they can assure that their customers are secured and satisfied and be able to prepare for a better tomorrow.

The types of insurance products that the company provides are as follows:

1- Motor Insurance (Compulsory Motor Act Insurance, Third Party Property Insurance, Comprehensive Insurance).
2- Marine Insurance (Marine Cargo Insurance, Goods in Transit and Land Transit Insurance).
3- Fire and Allied Perils Insurance, Including Burglary Earthquake and Loss of profit.
4- Workmen's Compensation and Employers Liability Insurance.
5- Third Party Liability Insurance.
6- Money Insurance.
7- Fidelity Guarantee Insurance.
8- Personal Accident and Travel Insurance.
9- Engineering Insurance.
10- Professional Indemnity Insurance.
11- Household Comprehensive Insurance.
12- Health Insurance.

1.4 Problem Statement

Service quality can be concisely defined as the personal experience of the customer with the service provider. Service quality is playing an increasingly important role in the present environment where there is no further scope for the companies to differentiate themselves other than the quality of the service provided by them. Delivering superior service quality than the competitors is the key for the success of any organization. At GUI, increasing quality of service leads to increasing of customer satisfaction, which is one of the main objectives of the company.

In cooperation with the head of the department, it was found that GUI is taking a very long time to pay the repair workshops owners for bills that are provided by them, where these invoices reflect the value of the parts and manpower that were used to repair the insured cars after the accidents. 84 bills were analyzed randomly, the results of the analysis indicated a delay in paying the bills between 3 days and 9 months. In addition, GUI takes a very long time to return the cars to their owners after the accidents.

1.5 Importance of the Research

The importance of this research is to improve the different processes within Car Accident Department at the GUI. The reason for this is that there have been many complaints from the customers due to the inefficiencies in the processes such as delay in repair, delay in spare parts, delay in payment, difficulty transactions sometimes, difficulty in communicating with the company sometimes…. Therefore, to decrease the wastes that are in these processes as well as the risk of losing disappointed customers, these processes must be more efficient so that GUI can decrease the time that it takes for the company to pay the repair workshops repair workshops, to

decrease the repair time of the customers' cars, and finally and most important creating a proper source for parts that are needed for the repairs.

1.6 Research Questions

Based on the problem statement, the following research questions can be formulated:

- How the time to process payments for repair workshops' invoices affect the performance and satisfaction of owners of repair workshops?
- How reducing the time to repair customers' cars affect customers' satisfaction?

1.7 Research Objectives

The main objectives can be summarized as follows:

- To improve the process of payments of invoices received from repair workshops.
- To reduce the lead time for repairing customers' cars to achieve the company's targets.

1.8 Research Limitations

During the period of this research there were several limitations that caused delays and additional efforts to overcome these limitations. These limitations include:

1- There was a difficulty in collecting the data and information needed for the research. The employees were afraid to provide information (negative information particularly) since they were afraid that they would get in trouble from the seniors in the company for providing the information, even though the researcher obtained full authority from the higher management to conduct this research and collect all the information needed. Also collecting information from the repair workshops was difficult since the owners of some of the repair workshops did not understand the concept of the research and they were also

afraid of providing information so that they do not disappoint GUI's management. Therefore, it took a long time and effort to convince the staff of GUI and the owners of the repair workshops to provide the information as the goal of the research is for the benefit of the company all of the needed approvals to do so were received.

2- The difficulty of reaching to the customers and repair workshops. Even though most of the customers and repair workshops that were surveyed were in Ramallah and Al Bireh,,they are dispersed throughout the city. The distances between the different entities surveyed made it longer for the surveys to be conducted.

3- Another limitation that was faced was implementing the recommendations that were provided after the research was conducted. The reason for this limitation was that the teams at GUI were acquainted with the current processes and having major changes done to the processes at once can cause confusion and many mistakes to happen during the implementation phase. Therefore, the management of GUI decided and promised to conduct these changes in gradual phases to not affect the processes of the company to eliminate any discontinuity in their operations, noting that they were provided with the needed details on the changes that have to be made.

1.9 Research Outcomes

The outcomes of this research are as follow:

1. All of GUI's departments were studied. The department where the highest number of daily transactions takes place is the compensation department. Among the various processes in this department, the repair process, payment process and spare parts procurement process are the ones that struggle from a high number of issues.

2. In order to ensure the validity of these issues and identify their effects on the customers' satisfaction, 3 surveys were designed and conducted for each problem (delayed payment of bills, delayed repair process, Delayed supply of spare parts) .
3. The Lean Six Sigma methodology and tools were implemented and this resulted in identifying the root causes for the problems and revealed the wastes in the processes.
4. A set of recommendations have been deduced via this study. These recommendations would assist the firm to overcome the mentioned issues.

1.10 Thesis Structure

The thesis is presented in seven chapters as follow:

Chapter one provides a general introduction and an overview of the study. Chapter two presents a comprehensive literature review about Lean Six Sigma and other related quality and improvement methodologies. Chapter three summarizes the research methodology that was followed in this thesis. Chapter four provides the work that was carried out to implement the steps in the Define Phase and Measure Phase of the DMAIC cycle. Chapter five provides the work that was carried out to implement the steps in the Analyze Phase of the DMAIC cycle. Chapter six provides the results and discussion, and chapter seven summarizes the main conclusions, recommendations and future work.

1.11 Chapter Summary

This chapter provides a simple background of Global United Insurance (GUI) in addition to the wastes and inefficiencies that it was facing. The chapter also highlights the research questions and the objectives of the research. Finally, this chapter highlights the outcomes and limitations that were faced during the course of the research.

Chapter 2

Literature Review

Chapter 2

Literature Review

2.1 Overview

This chapter summarizes some of the published articles and papers that discuss the integration and implementation of Lean Six Sigma, Service Quality, and Processes Improvement.

This chapter is divided into two sections. The first one presents the theoretical background about the adopted research methodology and tools, and the second one presents previous studies with regards to the application of Lean Six Sigma in both the public and private sectors.

2.2 Introduction to Six Sigma

According to Montgomery and Woodall (2008), Quality is a competitive tool that gives an advantage to the organizations that employ the basic principles of quality efficiency. The business satisfies customers by improving quality and this makes them dominating their competitors. We can achieve long-term business success by improving quality.

Six Sigma is a methodology designed to carry out projects to eliminate defects and reduce variation and remove the defects of the process, products, and transactions. Montgomery and Woodall support Six Sigma to achieve significant success in productivity and quality improvement around the world. The use of statistical methods is an essential element of this measurements-based process.

In 1986, Motorola was the first to introduce the term Six Sigma where they defined it as a set of tools and techniques to improve processes (Webber, 2006). On the other hand, it was referred to as a statistical measure of variation when the defects have a very small chance of occurrence, which was stated by Maleyeff (2007) at 3.4 defects per million chances. Bevan et al (2006) stated that Six Sigma is a methodology that was developed by Motorola in the 1980's with the aim to reduce the defects in the processes that they had. The goal was basically to reach a level of performance where the defects were at a rate of 3.4 defects per each million opportunities, or even reach a defect-free environment, which is Six Sigma performance.

The Six Sigma metric focuses on defects per million opportunities (DPMO) defined as follows:

DPMO = DPU X 1,000,000/opportunities for error.

Where DPU is the defects per unit which is the average number of defects per unit of a product given by:

DPU=total number of defects found in the sample/sample size

Six Sigma is usually defined in a manufacturing specification context where it represents a level of a maximum of 3.4 defects per million opportunities, where Six Sigma represents six standard deviations from the mean of the processes when centered to the specification limits.

2.3 Introuction to Lean

Miller (2005) described Lean as "using less to do more" by "determining the value of any given process by distinguishing value-added steps from non-value added and eliminating waste so that ultimately every step adds value to the process". As Six Sigma was used by Motorola, the

Lean Principles were enhanced and developed by Toyota, which later lead to the creation of Toyota Production System.

As companies are continuously focusing on the internal operations where they are trying their best to increase efficiency and reduce costs, due to the fact that the general market and economic conditions basically drive companies towards doing so, (Radnor, 2012).

As stated, Lean principles are an approach used by companies to strategically improve their processes. But only focusing on reducing costs at an operational level will not allow the institution to gain all the benefits of implementing the Lean principles. Therefore, other aspects must be taken into consideration as well to assure the proper implementation of the Lean principles within the institution. This was clarified by Womack and Jones (1997) where they described three fundamental business issues that should guide the entire organization on Lean transformation, which are:

1- **Purpose:** Which problems for the customers will it solve?
2- **Process:** To be able to see how will value streams be analyzed to assure each step is of value, capable, available, sufficient, flexible and connected by flow, pull and leveling?
3- **People:** How to assure continuous evaluation of the value streams taking into consideration of the purpose and the Lean process as well as actively improve so.

2.4 Introduction to Lean Six Sigma (Definition and Background)

Lean Six Sigma is a new concept which began to get interest in the mid 1990's, as it achieves the fastest rate of development in customer's satisfaction, costs, quality of products/services, the speed of the processes and invested capital, which reflects on the company's financials,

hence, maximizing shareholder value(Cuc & TRIPA, 2007). On the other hand, Furterer (2004) stated that Lean Six Sigma is basically an approach that focuses on improving quality, eliminating waste and reducing variation in an organization.

Six Sigma follows a process called DMAIC (Pronounced as D-MAC). DMAIC stands for Define, Measure, Analyze, Improve, and Control.

2.5 Lean Six Sigma Methodology in the Literature

Being an important topic that has taken the interest of many people, including many researchers, this caused the combination of Lean Manufacturing and the principles of Six Sigma, creating the concept of Lean Six Sigma. Starting in the late 1990's, making it a relatively new concept, many companies are taking interest and having the concept of Lean Six Sigma instated within their operations as well as within the public sector, This was presented by (Furterer, 2004), (Abu Zaid, 2011), (Maleyeff, 2007), (Zefaj, 2017), and (Maleyeff, 2014) in the public sector, while (Gijo&Scaria, 2014), and (Prashar, 2016) in the service sector.

2.6 Lean Six Sigma Toolkits

There are several tools that can be used for implementing the Lean Six Sigma methodology. In the following paragraphs, the tools that were used by the improvement team of the Car Accidents Department are defined:

1- **SIPOC:** Which stands for Suppliers, Inputs, Processes, Outputs, and Customers. These steps show the inputs and outputs of the different processes within the system. This tool is usually used during the defining phase of the DMAIC process since it presents the definitions of the different processes in a high-level overview reacquainting the

stakeholders with the processes. This is used to define a new process or develop the current processes that are being used, (Saxena, 2007).

2- **Voice of the Customer (VOC):** This is a tool that uses surveys, checklists, and/or interviews to reach out to the customers to learn what the customer exactly wants before the institution begins the development process so that they take these wants and needs into consideration during the development process. This is important since it documents the wants to assure that these wants are serious and confirmed by these customers, (Pyzdek, 2014).

3- **Value Stream Mapping:** This tool is usually used for manufacturing processes, but it can be considered for service processes as well if there are simple service aspects taken into consideration. The tool initially takes into consideration and maps the materials and information that are part of the flow of the process or assembly from where they are converted from primary resources to become a product or service that the customer is willing to purchase, (Martin, 2010). It is then used to analyze the current state of the process and understands what are the resources that are placed into the process and decreases the waste since unneeded resources will be clearly shown within this tool. It can also add value to the service or process since other resources can be identified and added to the process, where it will show the added value to the process and activities of the institution, (Rother, 1999).

4- **Project Charter:** It is a statement of the scope, objectives, and participants in a project, where it outlines the responsibilities of the stakeholders in the project and it also outlines the objectives of the project as well, and clearly showing the responsibilities of the project

manager. In addition, it is used as a reference of authority for the stakeholders of the project, (Pyzdek, 2014).

5- **Flow Chart**: is a graphical representation of the structure of process or system, algorithm or the step-by-step solution of the problem. It describes the flow of data through an information processing system. It allows better visibility of how the work of the process can be improved, through identifying the key elements of the process and detaching the steps that are not essential or even excessive. This tool is usually used for analyzing, designing, documenting, or mapping a particular process, and illustrates a solution model to a given problem, (Sevocab, 2008).

6- **Streamline & Standardize-8 wastes:** This tool displays all of the wastes that are within a manufacturing or service process. The waste refers to the activities that do not add value to the processor which cause additional steps in the process. The waste exists in any of the following 8 forms: Transport, Inventory, Motion, Waiting, Overproduction, Over-processing, Defects, and Non-Utilized Skills. Such wastes are known by DOWNTIME.

7- **Cause and Effect Diagram:** This tool is also known as Fishbone Diagram because its shape is similar to a fish skeleton. It is also known as Ishikawa diagram attributed to Kaoru Ishikawa who invented it. This tool is used to identify the actual causes for quality-related problems showing what are the exact causes that contribute to this problem. This is very important for analysis since it will show what are the exact causes of the problem, letting the development team knows which parts of the process to eliminate or fix, Watson (2004).

8- Therefore, researches and studies that were related to the services (within public or private institutions) were considered to be more related than other researches since the insurance industry is considered to provide services to their customers rather than products.

9- Since the goal of this study is also to improve the repair process and the financial process within GUI, studies that studied how the LSS Methodology was used to improve processes were also considered to be related to this study.

2.7 Lean Six Sigma in the Private Sector

Companies and institutions place quota and standards for the quality of services and products that they provide. Therefore, Process Improvement is an important proactive set of tasks to identify, analyze, and improve the business processes of the organization to optimize the processes to reach these quotas and standards in a very systematic manner, (Hamada, 2015). Therefore, it is basically closing the gaps between the processes through streamlining, cycle time reduction, and identification and elimination of causes of below specifications quality, process variation, and non-value-adding activities.

Rouse (2013) also defined the Business Process Improvement as a strategic planning methodology which identifies process, operations, and employee skills that could be developed and improved to create more efficient procedures and more efficient workflows, hence, leading to business growth.

Sarkar, Mukhopadhyay (2013) published a paper titled “Improvement of Claim Processing Cycle Time through Lean Six Sigma Methodology”. The purpose of this paper is to present a Lean Six Sigma case study for reducing cycle time in the claim settlement process in insurance or financial service. The intangible benefits achieved are: increase in customer satisfaction, increase in business reputation and scope of new business generation. Moreover, a reduction in operational cost of the branches has been achieved by resorting to the practice of collating and

dispatching the documents together instead of by part. Finally, the estimate of the corresponding saving has been worked out to be INR 35 lakhs per annum.

Gijon & Scaria (2014) discussed how successful was the implementation of the Six Sigma DMAIC methodology in addition to the Beta Correlation Technique (which is used for monitoring the process in the control phase) in an automotive part manufacturing company. The methodology clearly reduced the problems that the company had within the process, making the quality pass of the products to change from 94.86% to 99.48%. After the managing team of the factory conducted the needed analysis and brainstorming sessions, they were able to identify the problems they were facing during the different manufacturing problems and were able to know the root causes of these problems. After knowing the root causes of these problems, they were able to eliminate these causes from the process, making the full process more efficient and effective.

The above cases show that there has actually been proper development, cutting costs, and improving the quality level of the services and products that were being made due to the usage of LSS in studying the causes of the problems in those processes. There have been other researchers who also identified that implementing LSS in the institutions has strongly contributed to the decrease of wastes and costs and has made the processes more efficient as well. Furterer (2004), Abu Zaid (2011), and Maleyeff (2014) have all made research showing that implementing LSS within business operations such as human resources management, information and analysis systems, customer services, etc. has strongly contributed in the success of these institutions. In addition, the usage of the LSS methodologies has given management the trust to implement these changes since they were all based on well-studied methodologies and allowed the management to give full support and commitment from the senior management of these institutions.

Many researchers have conducted research on improving the quality using DMAIC methodologies in improving services' quality. Focusing on the 5 phases of the DMAIC methodology, which are Define, Measure, Analyze, Improve, and Control, the following paragraphs summarize the researches that were conducted.

Nakhai (2009) published a paper titled "The Challenges of Six Sigma in Improving Service Quality", the purpose of his paper is to critically evaluate the contributions of six sigma methodology to the improvement of service quality and has reached the conclusion that the relentless drive toward adopting six sigma to services has led both to a limited field of applications and to unrealistic expectations as to what six sigma is truly capable of achieving, particularly in knowledge-based environments.

Tennakoon (2015) was also able to conclude that the application of the DMAIC methodology improved the development of the services provided by the companies that he has studied as well. He stated that the service industry has become very competitive and that implementing such methodologies is very critical and beneficial for any institution that does so since it increases the quality of the service that is provided, hence, making the customer more satisfied. This led companies that have implemented these methodologies to have competitive advantage over companies that didn't take these methodologies into consideration.

Kaushika and Khanduja (2009) studied the application of Six Sigma DMAIC methodology in thermal power plants, where the power plants were able to reduce the mean intake of water from 0.90% to 0.54%, which lead to great amounts of money savings yearly. Hea, Zhanga, and Zhang (2014), used the DMAIC methodology to improve the service quality within the HR department of the company that they were studying. The methodology was applied to reduce the voluntary turnover rate of employees who were leaving the company. After doing the necessary analysis

and improvement actions, the weekly turnover rate of the dispatched rate of employees decreased from 2.5% to 1.4%. This led to saving human resources costs and made improvements in the production quality of the department and the employees.

2.8 Lean Six Sigma in the Public Sector

Lean Six Sigma is also an important methodology used by governmental institutions as well to increase the efficiency of operations within the different departments of the governmental institution to increase efficiency and decrease costs.

Sbeha (2016) conducted a study on the different methods of improving the services that were provided by the government where he recommended that the municipality should improve the efficiency of its management, where the municipality needed more efficient staff as well as increasing the usage of technology to reach the development goals that they wanted to set for themselves.

This also comes in harmony with what Aljbory (2008) has researched that continuous development of the processes and operations is critical considering the critical analytical style must coincide with the statistical references and the managerial applications of these analysis. He also stated that the Process Improvement integrates perfectly with Six Sigma as both methodologies care about decreasing costs and increasing the efficiency and effectiveness of the operations.

Prashar (2016) on the other hand was able to illustrate a real-life Six Sigma methodology in addition to other tools to figure out the problems faced in an energy related issue of public utilities. After conducting the proper analysis, he was able to decrease the wastes, making the

energy loss and wastes within that case decrease vastly, saving about a quarter million rupees in the Narela District (where the initial study was conducted) alone.

Maleyeff (2007) studied how the LSS methodology was used in some governmental agencies in the USA to increase the efficiency of the operations within these agencies. The Navy, Air Force, and Homeland Security were studied, and the following outcomes of the research were found to be related to this research. Lean Six Sigma provides the proper framework for efficiently providing services to the related parties Lean and Six Sigma methodologies were able to develop the collection techniques, making the financial departments more efficient.

Abu Zaid (2011) studied how customer satisfaction was increased once the processes of the Civil Status and Passport Departments were more efficient. The use of LSS methodologies was able to increase the efficiency of the operations of the 2 governmental agencies, making the time for providing the citizens with the services they required less. This led to more satisfied citizens since they did not have to wait long hours to obtain the services, they sought like they used to in the past. She also found that having the commitment of the senior management of these governmental institutions for this development was a critical success factor to successfully instate the LSS methodology develop

2.9 Applications of Lean Six Sigma

According to Chakrabarty (2006), he used the tools of six sigma such as (FMEA), Statistical Process Control (SPC), reproducibility, gage repeatability and other tools in his study which aims to determine the key performance indicators as much as possible in the scope of services. He chose two basic processes whether customer-oriented service or the design and production of

a product. To achieve perfection, Six Sigma methodology helps achieve 3.4 defects per million opportunities. It is from this target that the "Six Sigma" name originated. The author has applied DMAIC to existing processes; he concluded that this methodology is used in the manufacturing sector more than the service sector. He found that it's not applied in all hospitals, but applied in some laboratories, and applied in developed countries more than developing countries. The study provides an understanding of KPIs and CTQs in many different sectors and despite the diversity of services, there is some uniformity in KPIs.

Antony (2006), who demonstrated the power of Six Sigma. He mentioned that it is a way to develop process, product or quality of service in the service industry. He used a series of steps (DMAIC). His study examines the six sigma common performance measures used in the service industry. Success factors that make the publication of Six Sigma successful are discussed followed by providing some guidance for the selection of the Six Sigma projects. He referred to the future research work that will be carried out by both the research community and the practitioners in Six Sigma in the next years.

According to Taskar, Raghuwanshi, and Antony (2018), the Six Sigma methodology will help reduce wasted time, reduce errors, and reduce cycle time for each process. The service sector helps to improve the quality of the services, many financial companies have started using this methodology. Many Private Banks have used Six Sigma methodology and found it profitable for them. In this study and after applying the methodology in the banking sector in India, in addition to understanding the concepts of Six Sigma and their impact on financial operations in banks, they found that the banks using Six Sigma to enhance their effectiveness and efficiency. The banks which are using these concepts have received more profits than those that did not. This reinforces the use of six sigma methodology in banks to increase customer satisfaction.

Rathilall & Singh (2018) conducted a study at KwaZulu-Natal (KZN) which is a global organization for the manufacture of automotive components in South Africa. The primary objective of the researchers was to ensure that the methodology of Six Sigma was used as a unified approach for continuous improvement in the automotive components' manufacturers. They said that if an organization wants continual improvement, it needs to recognize that there are significant interactions between the improvement technique and their management system. In addition, there are always opportunities for improvement in institutions and companies, even if they claim to use systems for improvement.

Another study carried out by Miski (2014) at IKEA, which is a global furniture company. In 2011, one of IKEA's international branches has achieved a great loss due to customers' complaints. They have implemented Six Sigma's DMAIC methodology, and some of the tools which were used including: SIPOC, KANO model, Data Collection for measuring and understanding customers' dissatisfaction, Pareto Chart, Affinity Diagrams, Ishikawa Diagram, and finally Control Charts. At the end of the project, they were able to reduce the complaints from 333 to 43 complaints/ month, which is a very large percentage.

According to the study carried out by Chai, et al. (2016), which aimed at reducing the percentage of cesarean deliveries in women and resort to natural deliveries at Taizhou Hospital in Zhejiang Province, China. DMAIC was applied step-by-step. In December 2014 and after implementation of the Lean Six sigma methodology, a total of 1,124 births were recorded, of which 306 were caesarean sections and the rest were normal births. This means that the LSS application succeeded in raising the ratio from1.706 to 1.967.

2.10 Chapter Summary

After reviewing the studies that have been presented in this chapter and the different sources on the internet, it was found that there were no studies regarding the improvement of operations in insurance companies in Palestine, which shows the clear evidence of the gap of knowledge that has not been covered yet and the actual level of services in insurance companies in Palestine. Therefore, this research is allowing the improvement team to fill this gap by improving key processes of the Cars Accidents' Department at the Global United Insurance (GUI) Company.

On the other hand, it was found that LSS Methodology played a very important role in the development of the operations within the services industries, as shown in the studies that were considered related to this research.

Chapter 3

Research Methodology

Chapter 3

Research Methodology

3.1Introduction

LSS methodologies assist institutions to improve the efficiency and effectiveness of the operations they have. Using the strengths of both Lean and Six Sigma, customer satisfaction can be obtained by providing the customers with the services in a faster and a more efficient manner. LSS can be adopted by GUI Co. to develop the maintenance process of the damaged cars. This application can help GUI in repairing the cars faster and with less cost, which means happier customers.

During the review of the different literature sources that were related to LSS or Six Sigma methodologies it was found that there are no evidences that Six Sigma or LSS is applied by the insurance sector in Palestine, or any other country regionally. There were several papers that are related to the service industry, where the insurance industry could be considered to be part of, as they are providing services to their customers. These papers have successfully identified several elements that should be taken into consideration when applying LSS or Six Sigma methodologies in the services industry. These concepts can be adopted within the insurance sector, and particularly within GUI, as the operations within the insurance sector is basically providing services for their customers.

3.2 Research Strategy

At the beginning of this research is considered an exploratory research as the exact causes that is causing the problems prior to this research was not clear. Therefore, several methods were used

to collect data and information to lead to the research's objectives. A diversity of research methods were used to collect sufficient data and information to exactly identify the problems GUI was facing which were leading to the delays in the processes. The DMAIC methodology, questionnaires, and interviews were used to collect the information and understand the causes of the delays within GUI's processes. Proper analysis will be conducted on the information that was collected and changes will be instated to the processes to make these processes faster and more efficient.

3.3 Research Focus – The Repair Process within GUI

LSS, when implemented properly, can improve the quality of services that are provided and increase the efficiency of the processes or procedures. Therefore, LSS methodology is chosen and applied to improve the procedures of the collection process for the invoices in the car repair workshops repair. This led to a focus on the way LSS will reduce the time wasted for the customers who are insured with GUI as well as the delay in other related processes. Another item to note is that LSS can be used to improve the procedures and policies of any other department within GUI as well.

3.4 Data Collection

To collect the data needed to conduct this research, the below sources and methods were used:

1- **Interviews**

Several interviews were conducted, and some questions have been asked to number of employees during the visits that were made to the headquarters of the company and some of its branches as shown in Figure 1. These interviews were done with the contacts of the

departments that are related to the 2 processes that are being studied, which are the delays in payments to the repair workshops owners and the second being the delay of having the wrecked cars repaired.

Interviews were conducted with the top management and some members of the board to be able to understand their impression of the services that they are providing. In addition, discussions regarding the high-end strategy of the company were made to be able to understand what are their plans for GUI and to what direction (within their market) they are going. Their impressions, thoughts, and strategies are very important since they are the decision makers within the company. Moreover, as stated earlier, there is high bureaucracy within the company; therefore, all the matters of the company should be pouring towards these members of the board and top management. In addition, the goals of this research were shared with these members to understand their level of acceptance of any of the changes suggested in this research. Generally, their impressions and thoughts were more optimistic than the impressions and thoughts of the lower levels of staff.

The lower levels of staff had a different approach towards the matters of the operations since they are the people who have to personally deal with the customers, repair workshops, the systems, etc. These staff members had more of a pessimistic approach towards the operations. Their impression of the operations is not as good as the higher management sees it. It may be considered that their views as closer to the truth since they are the people at the line of action, as well as the number of staff with that impression were lots more than the optimistic impressions.

Questions list:

1-What are the main processes in GUI?

2-What processes face the biggest amount of issues?

3-From your opinion, what are the main reasons for these problems?

4-What are the primary cost-effective solutions that can be implemented to commence the improvement process of the accident's compensation department?

5-What would increase the satisfaction level of the customers?

6-How would decreasing the time frame for the customers' bills payments affect the company?

7-How would decreasing the maintenance time effect on the customers?

8-How would depending on only one supplier for the car parts affect the company?

9-How much would be depending on only supplier for the car parts save for the company?

10-How would the positions and responsibilities be redistributed on the employees?

11-Is it possible to increase the femployee's headcount?

12-Where do you see the GUI in the future?

Figure1: A list of questions that have been asked to the employees at GUI

2- Observations

To be able to collect as much information as possible, visits were made within the company to observe the operations and processes conducted by GUI. The GUI higher management provided the approvals needed to observe most of the operations. However, some matters and procedures were dealt with very confidentially and approvals to observe them were not granted.

The following departments that were related to the 2 processes that were being studied were observed and analyzed. These departments are as follows:

1- **IT Department:** To observe the technical issues that the company is facing as well as to understand how the systems work and their level of complexity.

2- **Financial and Procurement Department:** observing how the payment process is conducted and how the financial team checks if the repair services were reconciled and if the values are correct and how eventually the amounts are paid to the garage owners.

3- **Car Accidents and Compensation Department:** This is the customer service department that is related to the car accidents. They are also the team that visits the scene of the accident and report how the accident took place.

A few visits were also conducted to some of the main repair workshops GUI deals with to observe how the repair process is conducted from the time the car is handed over till the car is completely fixed. The repair workshops were observed in regards of the time it took for the car to be repaired.

During the observations, all of the processes were documented properly to assure proper reference to these documents so that they can be reviewed and analyzed. These notes were used in the interviews to define the problems that GUI has. The Fishbone, SIPOC, and the Charter analysis (previously in chapter 4) were used for that purpose. They were also the basis of the measuring phase that will be conducted to be able to have Lean Six Sigma implemented at GUI.

3- Surveys

Two surveys were conducted (as can be seen in Appendix A and Appendix B) which were used to collect information from customers of GUI and the repair workshops owners in order to study their tolerance of dealings with GUI. The first survey was related to the delay in payments to the repair workshops owners for the services that they provided. Hence, a survey with the different repair workshops owners was conducted. The second case is the delay of cars collection from the repair workshops after the cars are fixed. For that, surveys were conducted with the customers who got their damaged cars fixed through GUI.

1- Repair Workshops Survey

This survey was made to understand the repair workshops owner's opinion of GUI and the relationship between them as well as knowing if they deal with other insurance companies.

-The survey and its analysis are shown in Chapter 5

The first section of the survey was to collect general information on the repair workshops owners such as the city that they are in, the type of maintenance they conduct, the size of the repair workshops, the number of insurance companies that they deal with, etc.

The second part of the survey covers the relationship between the repair workshops and GUI and their satisfaction level of GUI.

The third part is regarding the processes and dealing with the staff of GUI and regards to their feelings towards the speed of these processes.

The fourth part is regarding the means of communication between GUI and the repair workshops owner.

The fifth part is regarding the payment process between GUI and the repair workshops.

The final part of the survey was an open answer question which was used to understand the repair workshops owners' impression and suggestions in regards to the process of collecting the repair parts.

2- Customers Survey

This survey is made to understand the customer's impression of GUI and their satisfaction with the services that GUI provides them with.

-The survey and its analysis are shown in Chapter 5

The first section is to collect general information regarding the customers and understand their relations with Insurance companies in general.

The second section collects information regarding the relationship between the customers and GUI.

The third section covers the processes and transactions between the customer and GUI in addition to the means of communications between them.

The fourth part is regarding their satisfaction with the maintenance service that was conducted to their car.

3.5 The DMAIC Approach (Definition, Background, Objectives, and Tools)

Using the DMAIC methodology (explained below) is an important tool within the LSS since it highlights the problems that are within the processes. Following the DMAIC approach with the other problem-solving tools of LSS will assure that the wastes and inefficiencies will be resolved and eliminated.

In each phase of the DMAIC methodology there can be different set of tools used for the analysis (Zaman & Zerin, 2017), such as:

1- **Define Phase:** tools such as Problem Context Diagram(PCD), SIPOC, Project Contract and Project Charter can be used to help identify the problems that the company might face and also define the customer requirements, (Henderson & Evans, 2000). In addition, it is used to choose the process that will be focused on in order to either, reduce the variation or eliminate the waste in this process or do both of them, define the objectives, goals, resources, scope, and timeline for the project. Finally, it is used to define the way to improve the process from both the company and the customer's perspective. The first step is defining the problem, which is the most important step of the project as having a good and strong understanding of the problem making it easier to resolve it.

2- **The Measure Phase:** The Control Chart, Voice of Customer, Pareto analysis, Process flow chart, eight wastes and Quick wins are just a few of the useful tools that can be used in the measure phase. The goal of this phase basically aims to understand the processes in a more detailed manner, which will be used as a base for the development of the processes.

3- **The Analyze Phase:** In this phase, the data that were collected in the other phases are analyzed to identify the root causes of the problems, (Kapur & Feng, 2005). Some of the tools that are used in this phase include cause and effect diagram, hypothesis testing, five whys, and Pareto Chart.

4- **The Improve Phase:** The mostly used tool in this phase is the plan-do-study-act (PDSA) tool which is used to test the solutions determined and identify which of them addresses the root causes. The focus of this phase is to make the processes change for the better. Other tools that are also used in this phase are the control charts, implementation plan, communication matrix, etc.

5- **Control Phase:** This is the final stage, which assures that the implementation of the developments is permanent and are done correctly and the problems do not recur (Mathew et al, 2005). It also assures that the gains and benefits are actually done based on the goals of the developments suggested, hence, making it preventive in nature, i.e. not to lose the benefits of the developments. Finally, the flowchart for the new process is created and is used as a map for the processes that should be followed to assure that the new processes are monitored and are providing the performance sought.

3.6 DMAIC PhasesObjectives

Koning and Mast (2006) have stated that the DMAIC objectives are as follow:

1- Define Phase:

- Problem selection.
- Benefit analysis to identify and map relevant processes.
- Identify stakeholders.

- Determine and prioritize customer needs and requirements.
- Make a business case for the project.

2- Measure Phase:

- Translation of the problem into a measurable form.
- Measurement of the current situation.
- Select one or more CTQs (Critical to Quality) and determine operational definitions for CTQs and requirements.
- Validate measurement systems of the CTQs.
- Assess the current process capability.
- Define objectives.

3- Analyze Phase:

- Identification of influence factors.
- Identify the causes that determine the CTQs' behavior.
- Select the vital few influence factors.

4- Improve Phase:

- Design and implement of adjustments to the process to improve the performance of the CTQs.
- Design actions to modify the process or settings of influence factors in such a way that the CTQs are optimized.
- Conduct pilot test of improvement actions.

5- Control Phase:

- Empirical verification of the project's results.

- Adjustment of the process management and control system in order that improvements are sustainable.
- Determine the new process capability.
- Implement control plans.

3.7 Uses of the DMAIC Approach

DMAIC is a five-step systematic method which aims to identify the problem, measure the current waste and variation, analyze the root causes, find appropriate solutions to reduce inefficiencies and remove wastes, to be able to create procedures and controls, and to finally achieve and sustain improvements. (Mast & Lokkerbol, 2012). It depends on many qualitative and quantitative techniques, focusing on the use of data and statistical analysis.

The research methodology followed in this research includes the following milestones:

- Distribution of questionnaires to owners of repair workshops and customers to know the percentage of satisfaction about payment process and repair process.
- Reviewing policies and procedures for the two processes through interviews conducted with the staff of GUI.
- Evaluating the efficiency and effectiveness of the two processes.
- Creating a flow chart and identifying the wastes within the processes using the DMAIC tool -Eight Wastes.
- Identifying root causes for the two processes using the DMAIC tools – Project Charter and SIPOC.

- Finding the best solutions to get rid of these problems using the DMAIC tool – Fishbone and Action Plan for changes.

3.8 Chapter Summary

Understanding the framework of the LSS and how each step is used for the development of the car repairing process is crucial to properly develop these processes. Placing the proper framework will assure that the future development will be based on a proper base (analysis) and the development is approached in a scientific method and know which DMAIC tools that will be used.

Chapter 4

Understanding the Problems at GUI

Chapter 4

Understanding the Problems at GUI

4.1 Introduction

After conducting several interviews with the staff and management at GUI, it was agreed that GUI should prioritize the development of the billing payment process as well as the time needed to repair the cars. These operations are critical and deal with and affect the customers directly. Customer satisfaction is paramount for companies in general and for insurance companies in particular since they provide their services directly to the customers.

4.2 Define Phase

The define phase is the first step of the Six Sigma DMAIC project. The objective of it is to define the project and its details including project title, purpose, scope, key players, barriers and risks, support estimates, expected benefits and schedule for the project. Then, the improvement team was formed with the help of the directors.

The project charter was then created, which is considered an important step in the Define phase of the DMAIC methodology because it defines the project problem, the project's purpose, business case, scope, key players, enablers and barriers, and support estimates.

In addition to the project charter, other tools that were used in the Define phase are Problem Context Diagram (PCD), SIPOC, and project contract. These tools are explained in the following paragraphs.

4.3 Problem Definition

GUI Co. is taking a very long time to pay the repair workshops owners for the repairs that they have conducted. In addition, GUI is taking a very long time to have the cars repaired and returned to their owners, which includes the difficulty in procuring the parts needed for the repairs at the best prices possible.

4.4 Understanding the Problems Using LSS Toolkits

After defining the problems that GUI are facing, LSS toolkits were used to analyze the operations within the repair process to recognize the causes of these problems. After doing that, other tools were used to solve them, and make the processes more efficient. The analysis were basically done within the framework of the DMAIC Methodology, hence, structured to properly identify the causes of these problems.

4.4.1 Project Charter

Project Charter is also an important way of defining the project. It is a statement used to understand the scope, objectives, and the participants in this project. It aims to increase the efficiency of the Global United Insurance Company. It also shows the responsibilities of the stakeholders in this project, the responsibility of the project manager. This can be done by understanding the problems that the company is facing from what was found in the SIPOC analysis that was conducted earlier. Based on the issues that were found through the SIPOC analysis, a business case is to be instated to resolve them and achieve higher efficiency. This is the reason why two project charters were created. The first is for the repair process and the second is for the billing process. Figure 2 depicts the project charter for the repair process.

Part I:

Project sponsor	Global united insurance company (Salah Almimi, Bashar Khufash)
Team leader	Masa Alsaify
Project title	improving the time to deliver the car to customers During the repair process
Date	15/11/2018
Issue	2/11/2018

Part II:

Problem definition and purpose
The problem is the long time it is currently taking GUI company to deliver the repaired car to customers Our goal is to reduce the delivery time and accelerate the repair process as much as possible within six months) It is the internationally agreed period for applying LSS methodology to any project.

Business case
*Customers lose confidence in the insurance company and sometimes lead to the loss of some customers and their transfer to other companies *Increase in the complaints *Increase in the employee's efforts to respond to customer contacts to speed up their vehicles

Key player		**Scope**
Sponsor	Basher khufash	In scope: IT department, Financial department, director of car accidents, head of motor accident compensation section
Team leader	Masa Alsaify	
Team member	Nuha, Munir, Rami	Out of scope: owners of repair workshops, Banks, agents
Other key people	Archivist, owners of repair workshops, assistant general manager of car accidents	

Enablers /risk mitigation	Barriers /risks
*Daily, monthly meetings, *room meetings *all the team members are available *CEO be present in the meetings * Adequate training for members *awareness * understanding of financial health * Full knowledge of quality standards and global industry standards	*Lack of sufficient knowledge of the competitive market * Dealing with a large number of repair workshops *Insufficient time *Interception of official holidays

Support estimates
we need a recommendation from the top management of the work required and help us to take all the information that helps in the improvement we need for support and assistant director of procedures

Figure2: Project Charter – Repair Process

In the project charter in Figure2: the focus is on how to achieve a shorter time frame for handing the customers their cars after they've been repaired.

As stated in the project charter, GUI is currently having a problem in providing the cars back to the customers after they are repaired in the proper timeframe. The goal is to reduce the delivery time and accelerate the repair process as much as possible to be able to provide the customers with their cars in the expected time. Therefore, one important focus of this research is to decrease the delivery time of these cars and create a business plan to ensure study agreed delivery time.

The departments and sections which are part of this study are the IT department financial department, Car accidents department, and Motor accident compensation section. The policies and procedures of the departments should be arranged in a manner to reduce the time needed to decide

on where these cars are to be sent to as well as understanding the needed parts and service for each type of accident.

The company is facing a problem where their customers are losing confidence in the company as well as the increase of complaints from these customers. Many customers are transferring to other insurance companies because they have lost their confidence in their insurance provider. This causes loss to the company and decrease in the company's customer base. In addition, this had led to the increase of employee's efforts to respond to their customers' inquiries and to push on the repair workshops to provide the cars in a faster manner. These pushes from the insurance company usually lead to incomplete repair projects as well as confusion between the insurance company and the repair workshops.

Enablers / Risk Mitigation

To assure that the business case is taken seriously, and proper measures are instated, the following points should be done:

1- Daily and monthly meetings should be held to assure that all of the departments are on the same page and all of the needed points are being attended to.
2- All of the related members of these teams should be present in these meetings to assure that the points are looked at from all of the needed directions.
3- The CEO or the higher management should be present in these meetings to assure that all discussions are overviewed by the higher management and to assure that all of the related parties take these meetings seriously.

4- Adequate training should be provided to the related team members so that they all have the proper knowledge and ability to efficiently execute their tasks.
5- Having full knowledge of the quality standards and the global industry standards.

Barriers / Risks

Any project will always have barriers and risks that they may face during the implementation and the continuation of these projects. These risks could be:

1- Lack of sufficient knowledge of the market that they are competing in.
2- Dealing with a large number of repair workshops may cost the company extra effort and time to review the maintenance and transactions between them and the repair workshops. It can also sometimes lead to the cars being sent to the wrong repair workshops.
3- Insufficient time to conduct the repairs within the needed timeframes.
4- Interception of the work due to different national and religious holidays, which leads to delays in providing the cars within the needed timeframes.

To have the above points avoided, proper support is needed from the higher management in the company for the project to be taken seriously. As well as providing all the needed information regardless of how confidential the information may be. In addition, support of the top management is needed to implement the new policies and procedures that are created post this project and assure all of the points are followed. Figure 3 summarizes the project charter of the billing process.

Part I:

Project sponsor	Global united insurance company (Bashar Khufash)
Team leader	Masa Alsaify
Project title	Improving the billing process at GUI company
Date	15/11/2018
Issue	1/11/2018

Part II:

Problem definition and purpose
The problem is the long time that the company takes to pay bills for repair workshops; this problem occurs particularly in the department of cars accidents. The goal of this project is to archive one of the department's objectives which is to process payments for invoices received in from repair workshops in the same day. The project's duration is expected to be six months

Business case
Currently it takes between 3days to 9months to pay the bills for the repair workshops *This delay in process payments reduces the confidence of owners repair workshops, and this would result in losing some of these repair workshops *this delay affects the employees credibility in front of repair workshops because they are the main contacts It impact on the employees and their confidence in the management and the ability of the financial company *this delay can result in losing a number of customers

Key player		**Scope**
Sponsor	Basher khufash	**In scope**: IT department, Financial department, director of car accidents, head of motor accident compensation section
Team leader	Masa Alsaify	
Team member	Nuha, Munir, Rami	**Out of scope:** owners of repair workshops, Banks, agents
Other key people	Archivist, owners of	

	repair workshops, assistant general manager of car accidents	

Enablers /risk mitigation	**Barriers /risks**
*Daily, monthly meetings, *Meetings room *all the team members are available *CEO be present in selected meetings * Adequate training for members *awareness about quality principles and methodologies * understanding of financial statues of company	*Dealing with a large number of repair workshops * Some repair workshops collect a lot of bills and then hand them over to the paying agent at once *availability of employees to participate improvement work.

Support estimates
Support from the director of procedures to support changing of some procedures No budget is required.

Figure 3: Project Charter – Billing Process

The project charter provided in Figure 3 looks into how to improve the billing process at GUI Company. The company is currently facing problems in regards of paying the bills to the repair workshops in a timely manner. The goal is to accelerate the payment process to a point of having the transactions closed within the same day of the issuing of the invoices by the repair workshops.

At the current time it takes between 3 days to 9 months for the company to pay the bills that are provided by the repair workshops. These delays in the payment process causes the repair

workshops owners to lose their trust towards the insurance company as that portrays it as financially incapable of paying its dues. This also affects the employees' credibility in front of the repair workshops as they are the first & main contact between the company and the repair workshops. Therefore, this possible loss of trust from the repair workshops' side may result in losing the relationship between the company and these repair workshops. They may refuse to work with the insurance company again. This leads to further problems where the company will have to look for new repair workshops to provide the repair services that were initially provided by the garage that has left.

Enablers / Risk Mitigation

To assure that the business case is taken seriously, and proper measures are instated, the following points should be done:

1- Daily and monthly meetings should be held to assure that all of the departments are on the same page and all of the needed points are being attained to.
2- All of the related members of these teams should be present in these meetings to assure that the points are looked at from all of the needed perspectives.
3- The CEO or the higher management should be present in these meetings to assure that all discussions are overviewed by the higher management and to assure that all of the related parties take these meetings seriously.
4- Adequate training should be provided to the related team members so that they all have the needed awareness and knowledge.
5- Full understanding of the financial positions of the company.

Barriers / Risks

Any project will always have barriers and risks that they may face during the implementation and the continuation of these projects. These risks are:

1- Dealing with a large number of repair workshops, which may lead to incorrect payments sent to wrong repair workshops.
2- Some repair workshops may provide a large number of invoices at once to the company which will make the sum of these invoices large, making it difficult for the company to pay them at once due to any liquidity issues.
3- The availability of the needed number of staff to have this project implemented within the assigned timeframe.

This project does not need any assigned budget to be implemented. In addition, the company needs proper support of the top management to instate the new policies and procedures that were created and assure all of the points are followed.

4.4.2 SIPOC (suppliers, inputs, process, outputs, and customers)

Being one of the most important tools used within the lean six sigma tool kits, SIPOC tool was used to learn about the different processes. This tool provides information about the inputs of the process, the suppliers of these inputs, the outputs of the process, the customers, the results measures, and detailed information about the process steps including process measures, process goals and sources of variation. In the following paragraphs, the SIPOC is created for both the repair process and the billing process.

Repair Process

Delays in the repair process cause additional costs on GUI, since in some cases GUI provides their customers with a replacement car till the customer's car is repaired. The longer the replacement car stays with the customer, the larger the costs incurred by GUI. In addition, delays cause customers' dissatisfaction with the company's service since the customers prefer having their own car rather than a rental car. Therefore, the SIPOC was used to analyze the repair process at GUI, as shown in Figure 4.

Key Business Process Name: Repair the car and deliver to customer				
Suppliers	**Input**	**Process**	**Output**	**customer**
-the transportation company - the customer - the accident department at GUI	- Car - Information about the accident - Information about the customer	**Process Purpose:** Repair the car correctly and deliver on time to customer **Process Owner:** Masa Alsaify	- Quality of repair - Delivery time of cars to customers - Date and time of delivering invoice to GUI	- Car owners - GUI

Process Steps (High Level)	Select Garage → Send the car to the selected garage → Repair the car → Receive the car from the garage				**Results Measures** - Lead time to repair car -Number of cars repaired according to specification	**Customer Needs** - Receive their cars in as little time as possible - Compensation of customers on the same day delivery of the invoice
Process Measures	the status of the garage (previous experience)	Cycle time	Quality of repair Time of repair	Time to pick up car from garage		
Present Data	None	Time	- Number of complaints - time	time		

Goal Performance	No previous problem with garage	In the same day	Zero deviation from promised repair completion date Zero deviation from specification agreed on	In the same day	**Results Concerns**	**Date** 27/1/2019
Sources of Variation & Waste	- Long time to choose the garage -Choosing a garage has negative precedents	Delay in sending the car to the garage	- Inappropriate parts used - Difficulty in convincing the customer	none		**Version** 1.0
Impact on Performance	Delay in reporting Delay in Inspection time	Delay in receiving	Customer dissatisfaction	-customer dissatisfaction - department director dissatisfaction		

Figure 4: SIPOC for the Repair process

SIPOC Items:

Suppliers:

1- Car Companies.

2- The Customer (car).

3- Accident Department at GUI.

Input:

1- Car.

2- Information of the accident.

3- Information of the customer.

Process:

Process Purpose: To repair the car correctly and deliver the fixed car on time.

Output:

1- Quality of the repair.

2- Delivery time of returning the repaired cars to the customers.

3- Date and Time of delivering the invoice to GUI.

Customer:

1- Car Owners.

2- GUI.

In the current process, GUI selects the repair workshop that the damaged car will be repaired in. The workshop is selected based on the type of damage that the car has, as well as have qualified workers to execute the needed maintenance. Once the repair is conducted, the car is returned to the customer. The customer's expectations are to have the car returned in the state it was in before the accident and have the original parts from the manufacturer used for the repair.

In an efficient scenario, there should be no previous problems with the workshop that was chosen, and the cars that are being sent for maintenance should be fixed in the same day. In addition, there should be zero deviation from the promised repair completion date as well as the specification that have been agreed on.

However, the analysis shows that there are several variations and a lot of waste in the car repairing procedure. GUI takes a long time in choosing the repair workshops that the cars are to be repaired in. Dealing with numerous repair workshops not only means instability in the repairing time, and quality of the work conducted, but also means instability in the parts' quality that are used from one garage to another. Having unoriginal parts for the repair definitely requires a lot to convince the customers to accept the usage of these parts. Evidently, this caused an additional delay in the reporting and inspecting of the cars. It made it longer to settle on what parts will be used and what will be the cost of the repair. Therefore, this leads to a delay in obtaining the approval from GUI, and eventually leading to a delay in the car being fixed. This caused the dissatisfaction of the customers and their disapproval on the way their cars are being fixed.

Billing Process

The billing process is important for any company since it is directly related to the financial performance of the institution. Having the proper liquidity is critical for the company as it allows it to conduct its operations in a proper manner and be able to pay off any incurred expenses as soon as possible. Any delays in the billing process will cause a delay in the accounts receivables as well as the accounts payables within the company. Low liquidity levels slow down the ability for the company to pay off its dues or paying off any other critical payments that a company

might have. This will cause reputational risks for the company as parties that deal with this company consider it not able to pay off its dues as well as not committed to the operations that it claims it’s supposed to be doing.

The SIPOC analysis provided in Figure 5 was conducted on the billing process within the Global United Insurance Company.

Key Business Process Name: The billing process at Global United Insurance Company				
Suppliers	**Input**	**Process**	**Output**	**Customer**
- Compensation department - GUI Company - Procurement	- accident file - billing department staff - customer database - invoice book	**Process Purpose:** Make payments for invoices received from repair garages in the same day **Process Owner:** MasaAlsaify	- Payment of bills	- owners of repair garages

Process Steps (High Level)	Reporting an accident →	Conduct inspection →	Produce Diagnostic reports →	Make a decision where to send the car (garage) →	Repair the Car →	Receive invoice →	Checkup the invoice →	Pay the bill		
Process Measures	-cycle time - No. of accidents	- No. of inspections daily - Location of accident	-Cycle time -No. of reports	No. of cars per garage	Quality of repairs	No of invoices The date	- Match the invoice with the repair process - The value of the	-No of bills paid -Cycle time	**Results Measures** -lead time to pay the bill - No. of invoices -No. of bills paid	**Customer Needs** - Receive their cars in as little time as possible - Compensate customers on the same day of delivering the invoice

							invoice			
Present Data	- none - on average 10 accidents per week	-many reports/ Notifications	Comprehensive, third-party insurance, third party or bodily injury/case	none	none	delivery date	None	Payment dates		
Goal Performance	-Reporting at the same time as the incident	-decrease the time of writing -Electronic forms Installed on iPad	Accurate diagnosis of accident	2 cars per garage simultaneously	-Good quality - Minimize cycle time	-	-	In the same day	**Results Concerns**	**Date** 27/1/2019
Sources of Variation & Waste	Failure to report the accident immediately	- Handwriting -Far places	Filling the forms takes long time	-Long time to choose the garage	Difficulty in convincing the customer of the imported parts	-Delay in invoice delivery -waiting to collect some invoices and delivered them in one time	-	-		**Version** 1.0

Impact on Performance	Delay in reporting	Delay in Inspection time	Manipulation in cases	Variation in delivery	Variation in delivery	Delay in delivery	-Stack files - Delay in delivery	-customer dissatisfaction - department director dissatisfaction		

Figure 5: SIPOC for the billing process

SIPOC Items:

Suppliers:

1- Compensation Department at GUI.

2- Procurement Department.

3- GUI Management.

Input:

1- Accident file.

2- Billing department staff.

3- Customer database.

4- Invoice book.

Process:

Process Purpose: Make payments for invoices received from the repair workshops in the same day of providing these invoices.

Output:

1- Payment of bills.

Customer:

1- Owners of repair workshops.

As seen in Figure 5, the process starts once the accident is reported. The company then conducts the proper inspections of the accident to understand on whom the liability falls. The company then produces a diagnostic report based on an inspection that was conducted by the authorized department and makes a decision on which repair workshop to send the car to. The car is then sent for repairing and then, once the car is repaired and provided back to the customer, the garage provides an invoice to the company so that they can pay for the repairing services as well as the parts that were used. Once the invoice is received, the company checks the invoice based

on the requested repairs and compare them to the parts that were placed into the car. Finally, the company pays the bill to the repair workshop.

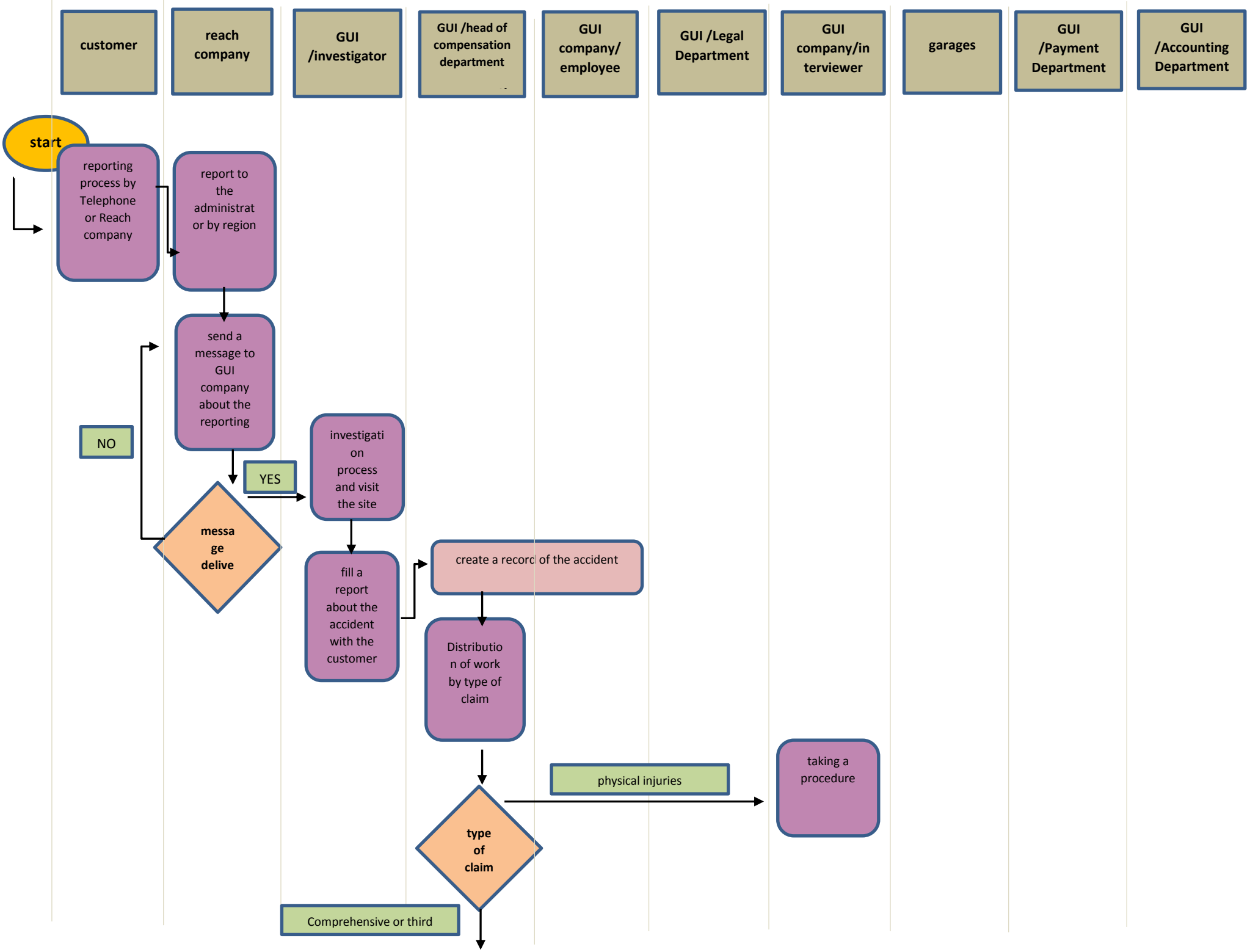
In an efficient scenario, the company pays the invoice that was provided by the repair workshop on the same day that it was received. The invoice should match exactly the repair report that was created by the company with regards to the parts that are to be used as well as the service that should be provided.

In the case of Global United Insurance Company, there are several variations and wastes in the operations causing the process to be inefficient. One of the first variations that is causing waste is the failure to report the accident immediately. In addition, once the inspection is conducted, forms are filled manually, which takes a long time to fill out as they are very comprehensive. Furthermore, the company takes a long time to choose the repair workshop since it needs to know and understand exactly what are the repairs that are needed to be done to the damaged car. Finally, once the company convinces the customer of the parts that are to be used and the repair is conducted the garage eventually is late in providing the invoices for the services and parts that are used, hence the delay on the company's side to pay its dues.

Due to all of the mentioned wastes and variations, there's a huge gap between the time of submitting the car for the repair, conducting the needed repairs and the repair workshop receiving the payment for the parts and services it provided.

4.4.3 Flow Chart

Based on the observations and interviews that were conducted a flowchart was created to show the whole process of how the car is repaired after the accident. As shown in Figure 6 below.


customer
reach company
GUI /investigator
GUI /head of compensation department
GUI company/ employee
GUI /Legal Department
GUI company/in terviewer
garages
GUI /Payment Department
GUI /Accounting Department
start
reporting process by Telephone or Reach company
report to the administrat or by region
send a message to GUI company about the reporting
NO
YES
messa ge delive
investigati on process and visit the site
fill a report about the accident with the customer
create a record of the accident
Distributio n of work by type of claim
physical injuries
taking a procedure
type of claim
Comprehensive or third

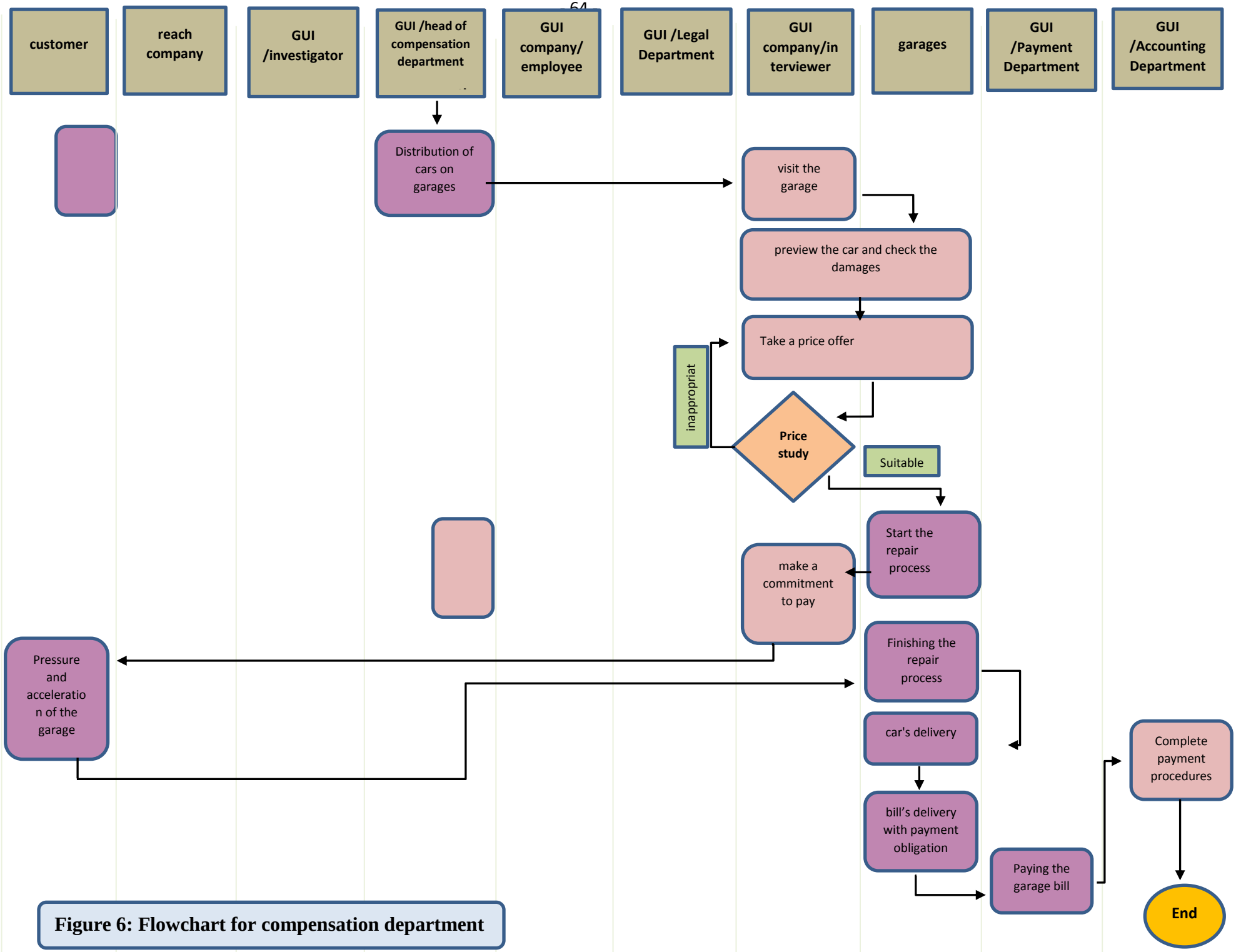


Figure 6: Flowchart for compensation department

The process starts when the customer reports the accident either by telephone or visiting the company. The choice of visiting the office is based on the region that the accident is reported in, where he/she creates a report that properly depicts the accident to the management of the company. The company sends a professional from the investigations office to visit the site of the accident and fill in another report that confirms and describes the details of the accident that happened with their customer. By that, a file or record is created for the accident on the system.

Once the record is created, and based on the description of the accident, the type of claim is then entered into the system. If there were any physical injuries the legal department takes its own procedures and assures that the injured customers were getting taken care of within the needed hospital. If the type of claim is just for the destruction that happened to the car, a comprehensive claim will be created, and based on the damage that happened a decision is made to send the car to which repair workshops for maintenance.

Once the car is received at the repair workshop, an employee visits that workshop to understand what are the damages that happened to the car. The workshop creates a price offer for conducting the maintenance and sends it to GUI. This price offer is studied by the procurement department within GUI, and if the price is suitable for the type of damage that happened, the repair process starts. If the price is inappropriate, the offer is sent to other repair workshops or the same workshop to review the price that was sent.

After receiving the correct and most reasonable price offer for the repair process the company makes a commitment to pay, finally advising the repair workshop owner to continue the repair process. During the process, the customer usually tries their best to pressure the company and the workshop to accelerate the repair process to be able to receive their car as soon as possible. Finally, once the car is repaired the car is collected by the customer and the

confirmation is received that everything is in order. The bills and invoices are sent to GUI for them to pay these invoices. After GUI conducts the proper analysis and reviews the reports and invoices and matches them with the price offer that was provided, the company pays the bill to the repair workshops and completes the payment procedures internally and does the needed reporting and paperwork. The payments are usually done either by cash or bank transfer to the account of the workshop owner.

4.4.4 8Waste

The 8 wastes tool shown in Figure 7 is a great way to understand the inefficiencies and obstacles in the way of providing the best service for the customers. This is another measuring tool that was used from the DMAIC process to see where the inefficiencies and wastes are within the process.

Workflow			DOWNTIME							
Step	**Activities**	**Executed by**	**Defect**	**Over-production**	**Waiting**	**Non-Utilized Talents**	**Transport**	**Inventory**	**Motion**	**Excessive Processing**
1	reporting process	the customer who make the accident	wrong date about the accident and its location							calls more than once
2	report to the administrator by region	reach company			internal officer is waiting if administrator does not answer the call	The administrator isn't qualified				
3	send a message to GUI company about the reporting	reach company								Send a message more than once
4	investigation process and visit the site	GUI /investigator	They didn't take the correct information		Wait to take all the information from reach or the customer in case of lack information		If the accident is in far place			

5	fill a report about the accident with the customer	GUI /investigator	handwriting							
6	create a record of the accident	head of compensation department	handwriting and Lack of required papers		Wait until the file is complete and all the official papers					
7	Distribution of work by type of claim	head of compensation department								Excessive handling in the complex accidents which has more one type of compensation
8	Distribution of cars on repair workshops	head of compensation department			When choosing the customer for the garage					Try to convince the customer to the garage
9	visit the garage	GUI /interviewer					If the garage is in a far location			
10	preview the car and check the damages	garage	If a garage is selected which is not suitable for car placement		If the car is hit large, and if the garage contains more than one car is under repair	Car repairman is not qualified				

11	Take a price offer	interviewer and garage			The garage does not respond quickly					
12	repair process	repair workshops	inaccurate repair		Wait in case of request spare parts for the car from another location	garage is not qualified				
13	car's delivery	repair workshops			If the customer does not take his car immediately					
14	bill’s delivery with payment obligation	repair workshops	Assembling the garage for more than a bill							

Figure 7: 8 waste table for the compensation department

When there is a problem in the process, this causes wastes and hinders the process, where in this analysis; it is called “DOWNTIME”. DOWNTIME is the acronym used to represent the 8 wastes which are as follow:

a- **Defect:** This occurs when the product or service is not useable. This usually results in either reworking or removing the product or service.

b- **Over-Production**: Producing too much of a product before it is ready to be sold. This is basically done in factories and product creation.

c- **Waiting**: Here is when there is time wasted waiting till the next process or step happens

d- **Non-Utilized Talents:** Not utilizing the talents and skills of the workforce that is available in the company.

e- **Transport:** Transporting items or information that is not required to perform the process from one location to another with no real necessity for them to be moved.

f- **Inventory:** Inventory or information that is not being utilized and is sitting idle.

g- **Motion:** People, information or equipment conducting unnecessary motion due to the design of the place, process issues or looking for misplaced items.

h- **Excessive Processing:** Conducting work or processes that are unnecessary and exceed what is requested by the customer.

Therefore, each step in the workflow is reviewed on the above stated points to see if there are wastes within the process. The step number is shown below is based on the numbering of the step that is in the workflow chart.

Reporting Process: Step1 – This step is done by the customer where they inform the company of the accident that has taken place through the different means of communication allowed by the company.

Wastes in this Step:

- **Defect:** This happens if the customer gives incorrect information about the accident (either by purpose or by mistake). This incorrect reporting is not good for the company since the company will have to correct the information on the systems after the correct information is provided.
- **Excessive Processing:** This happens if the customer calls the company more than once to report the accident. In some cases, this will make duplicate records for that single accident. Hence, making employees busy processing it till they find out that it is a duplicate reporting of the accident.

Report to the Administrator by Region: Step 2– Once Reach Co. (the call center that receives the accident report calls) sends the report to GUI's Accident Department, they provide them with the type of accident, contacts of the person who made the accident, and where the accident took place, so that the GUI investigator can go to the accident site to do the proper analysis of the accident and make a report of the accident.

Wastes in this Step:

- **Waiting:** The employee at Reach Co. (the internal officer) has to wait until the administrator at Reach Co. answers their call to collect the information needed so that the investigator can go to the accident site to do the needed process.
- **Non-Utilized Talents:** The administrator may not be qualified enough to understand the needed details of the car and insurance industry, making it difficult for the correct information to be collected and forwarded in the proper manner. Therefore, there will be loss, incomplete, or incorrect information transferred about the accident.

Sending a Message to GUI about the Reporting: Step 3– Once the call is made with Reach Co., the administrator sends the report to the Accident Department at GUI for their further action.

Wastes in this Step:

- **Excessive Processing:** If the administrator at Reach Co. sends the message/report more than once, there will be some duplication of the operations that is done by GUI till they find out that the report is a duplicate report.

Investigation Process and Visit the Site: Step 4- This is when the investigator from the Accidents Department at GUI goes to the site of the accident based on the notification/report that is sent by the administrator from Reach. The investigator conducts the needed investigations and creates a full report of the accident as well as taking the needed pictures.

Wastes in this Step:

- **Defect:** This happens if the investigator does not collect the correct information from the accident or writes incorrect information about the accident in his report.
- **Waiting:** The investigator will sometimes have to wait till all of the information is provided by Reach or by the customer to assure that he has all of the information needed to go to the accident site and conduct his investigations.
- **Transport:** Sometimes the accidents happen in places that are far from where the GUI's offices are at. This will take time for the investigator to go to the site and come back from it.

Filling a Report About the Accident with the Customer: Step 5– As stated in the previous step, the investigator has to fill in a report about the accident once the accident is reported by the customer via the call center at Reach.

Wastes in this Step:

- **Defect:** As these reports are written on the spot of the accident, these reports are handwritten by the investigator. This could take some time to fill out as well as the handwriting of the investigator sometime is not readable.

Create a Record of the Accident: Step 6– In this step, the compensation department creates a file for the customer for the accident that took place. All of the documentation that is related to the accident is filed in this file for organization and future reference.

Wastes in this Step:

- **Defect:** The handwriting from the investigator might not be clear and readable. In addition, maybe the investigator forgot to provide all needed documents needed to be filed.

- **Waiting:** There might be some waiting if not all the documents are available. They will have to wait till the customer or investigator provide these missing documents.

Distribution of Work by Type of Claim: Step 7– The head of the Compensation Department distributes the work based on the types of damages that happened to the car in the accident. Based on the damages they choose the garage at which the car has to be repaired.

Wastes in this Step:

- **Excessive Processing:** Sometimes the accident is very complex and has multiple types of maintenances that have to be done for the car. This will cause more time for the required different types of maintenances to be done. So, the wastes that happen in a single maintenance will occur in every type of maintenance.

Distribution of Cars to Repair workshops: Step 8– The head of the Compensation Department is responsible for deciding to which garage the car is to be sent to, how the car is to be sent and who's going to send it.

Wastes in this Step:

- **Waiting:** If the customer is deciding which garage to have their car sent to, that hinders the repair process, for in most cases the customer isn't aware of all the suggested repair workshops and their efficiency so they'll first want to make their own checking and analysis of what is the "best garage" to have their cars sent to.
- **Excessive Processing:** This downtime happens when GUI wants to choose a particular garage, but the customer wants another garage and the GUI will have to put efforts to discuss and convince the customer.

GUI's Follow Up: Step 9-To ensure that the car is being well taken-care-of and to avoid any stalling, a staff member visits the garage to stay on top on the maintenance job.

Wastes in this Step:

- **Transport:** Most of the repair workshops are located in the industrial areas at the outskirts of the city. Thus, there's a waste of time in commuting from the GUI offices to these areas.

Car Preview and Damages Check: Step 10–Once the car is delivered to the garage, technicians conduct their checkups to determine the repairs needed.

Wastes in this Step:

- **Defect:** This downtime happens if the garage that was chosen to have the repair done at is not suitable for the actual needed repairs.
- **Waiting:** The damage can be major and complicated so it takes a long time for it to be repaired and sometimes the car analysis can take time because of that. Also, sometimes the garage is busy with numerous other cars so they can't start immediately on the repair.
- **Unqualified Technician**s: Sometimes the technicians handling the car aren't experienced enough to conduct the needed repair. This could lead to elongating the maintenance time as their work will have to be re-done.

Getting a quotation: Step 11 –The stage of receiving an estimation of the prices of the spare parts and the repair fee from the garage.

Wastes in this Step:

- **Waiting:** The price estimation could take some time due to several reasons. The damage can be big so there would be several parts that need to be changed. Some parts may not be easy to find in the market, so it takes time for the price estimation to be completed.

Repair Process: Step 12– This process starts after GUI provides their approval on the price offer provided by the garage. The garage then procures the parts and begins the needed repairs on the car.

Wastes in this Step:

- **Defect:** This waste occurs when the repairs conducted aren't well-executed. In that case, the car is still considered damaged and can be dangerous for the customer to drive.
- **Waiting:** In some cases, the needed parts are not easy to find, especially if the model is not standard to the country. In that case the repair job will be hindered until the parts are available.
- **Unqualified Repair workshops:** Some of the repair workshops are not qualified enough to conduct some of the repairs which actually need specialized repair workshops and mechanics to conduct such specialized repairs. Some repair workshops are unqualified to conduct some specific types of repairs that require specialized technicians and/or tools.

Cars Delivery: Step 13–. The car is provided to the customer after it has been checked by GUI that all the agreed-on repairs are done and well-executed.

Wastes in this Step:

- **Waiting:** Customers sometimes take time to collect their cars from the garage. Thus, the car will remain in the garage until it's collected. This consumes space and can cause an issue for the garage to fit all the cars that are being repaired.

Completing Transactions: Step 14 –Once the repair is done and the car has been collected by the customer, the garage sends the bill to GUI so they can get paid for the parts and the services provided by them.

Wastes in this Step:

- **Defect:** In some cases, GUI may pay the garage a different amount than the one stated in the bill. This could happen due to misprocessing the payment (human error), or due to loss of a piece of information in the bill. This will lead to discussions going back and forth between the two parties until the matter is settled and either GUI pays the remaining amount, or the garage return the excess amount they had received.

4.5 Chapter Summary

Based on the analysis that was conducted, there are several inefficiencies and wastes within the processes of the company. The two processes that are reviewed have common causes for the delays the company is facing. Since the causes of the delays and inefficiencies have been clarified, actions should be taken to amend and remove these causes to make the processes more efficient and faster.

Chapter 5

Analysis of Root Causes and Research Findings

Chapter 5

Analysis of Root Causes and Research Findings

5.1 Overview

The main goals of this phase are to analyze the problems and process inefficiencies, identify the root causes for both the variation and waste, and to define the improvement opportunities.

In this chapter, the analysis tool used by the team is demonstrated. It is the Cause and Effect Diagram, and also this chapter includes the analysis of the surveys.

5.2 Causes of Low Customer Satisfaction

To understand the lack of satisfaction for the customers of GUI, the fishbone analysis is conducted. The aim is to identify the root causes of the problems that the company is facing in regards to the two most problematic areas, which are the delays in the bill payment and the long time needed to repair the cars. The fishbone analysis is a good way to understand the root causes of any problem that needs to be analyzed. It provides a map of all of the factors that may cause the problem that are being studied. This type of analysis shows the different reasons for the problem that is being faced, which in this case is lack of customer satisfaction.

Delays in Bill Payment

There are 4 main causes for GUI's delays in paying the due payments to the repair workshops as shown in Figure 8, It was reached through interviews with employees, customers and the head of the compensation and senior management department of the company. Each one of these causes has sub-causes which are the actual reasons for the delays in these payments.

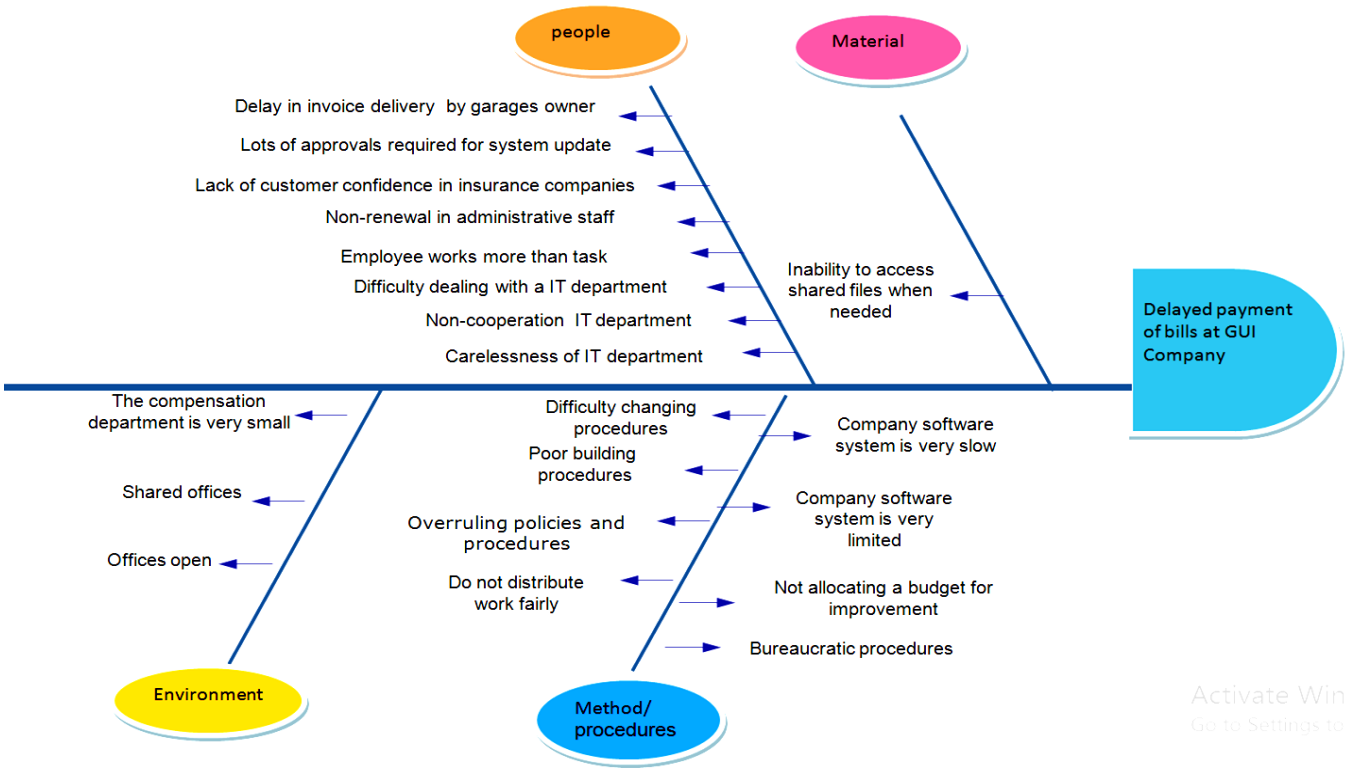


Figure 8: Cause and Effect diagram for delayed payment of bills at GUI Company

1- **Materials:**

a- **Inability to access shared files when needed:** There are important files that are shared between the different departments. When these files are used by one department, they cannot be accessed by the other departments which may need these files to conduct their operations.

2- **People:**

a- **Delay of Invoice from Repair Workshops:** The repair workshops owners are sometimes late in providing GUI with the invoices for the services and parts that they used in the repairs. These delays cause further delays for GUI to conduct their own processes for the payment since they might have to return to older files to reconcile the parts and services that were agreed on for those cars.

b- **Many Approvals for System Updates:** To have any updates done to the systems that are used within the company several approvals are needed to be taken. Even though any new system would make significant development and higher efficiency in the workflows, there are many members of the management and board of directors who interfere in the approval of such development for the company.

c- **Low Turnover in Administrative Staff:** Due to the low turnover in the administrative staff there is no "new blood" entering to the company. Therefore, there are no new ideas being instated. The current staff is used to the current process and tends to refuse any changes to any of the processes that are in the company.

d- **Lack of Confidence in Insurance Companies**: From a cultural perspective in Palestine, insurance companies and insurance products are not really accepted or liked by the general public. Some people feel that these companies are taking high

premiums and not providing proper services in return. In addition, the inefficiency of the insurance companies also causes the public to not trust the insurance companies as they may think that the delays in payments/providing their services is due to lack of money rather than knowing that it is due to the long inefficient process that the companies take to provide these payments or services.

e- **Multitasking Employees:** GUI, as most of the companies worldwide, seeks to cut costs and tries to attain higher profits. Part of their cost cutting strategies is to recruit the lowest number possible of employees. Therefore, the responsibilities are distributed on an insufficient number of employees. This results in the staff members being overworked and responsible for different tasks from different departments. Leading to staff disappointment in the management, stress and tiredness, and disorganization. All of the above cause inefficiency and lack of motivation for the employees to do their jobs properly.

f- **The IT Department:** This point covers the difficulty of dealing with the IT department. This is a usual issue that many of the companies worldwide face where the IT Department's interests are different from that of the business team's interests. This is because the technical team has different approaches to the way they want to conduct their systems and operations and have the "just make it work" approach. On the other hand, the business team has more of a cost saving approach and wants to make the processes faster and usually don't understand the technical constraints that any business process may have. Therefore, there is always a continuous feud between the two sides and rarely do they agree on one mean of action.

3- Methods and Procedures:

a- **Company Software is Slow**: The systems that are being used and the infrastructure that is supporting these systems are old and out-dated. Therefore, access to these systems and conducting the different operations on these systems are causing many delays as the process is slow in getting the information needed from these systems.

b- **Lack of Allocated Funds**: There is a lack of funds allocated for development in general. That means that there are no funds allocated for the development of the different systems that are used. Therefore, the companies usually consider continuing to use the current systems till they are completely depreciated. This causes even a greater cost to transfer to a new system since there will be a huge gap between the levels of technologies between the old and any new system that is being instated.

c- **Limitations of Company Software:** The system software that is being used by GUI is old and, as stated, the infrastructure that is supporting these systems is also out-of-date. Therefore, the software does not have the options needed to fully support the modern operations and services that the company wants to provide. This causes the company to not have the needed information on the spot as well as feeling that it is difficult to deal with the system as a whole since it is not properly developed and is not user friendly.

d- **Wrong Distribution of Work:** The responsibilities are not distributed amongst the team properly as some have more responsibilities and workload than others within the company, causing some tension between different staff members.

e- **Bureaucratic Procedures:** The work culture at GUI is the traditional way of operations where the decisions are only made by a handful of higher management

personas. Any payments, decisions, critical problems regardless of their size have to be sent to the top management for approval. This causes delays in the operations since the service or process has to go through each different management level and wait till decisions are made.

f- **Poorly Built Procedures**: The procedures and policies that are being used at GUI are outdated and are not fit for the modern services that the company is trying to provide. In addition, as the operations change over the years and new services are provided by GUI, the company does not update these procedures accordingly and introduce new procedures for the new services.

g- **Overruling Policies and Procedures:** As stated in the previous 2 points, the procedures that are being used by GUI are not efficient. Also, the company has a bureaucratic system. This leads to the top management to feel that they have the authority to overrule these policies and procedures and go against them. This made the team feel that regardless of the procedures placed, they will eventually be overruled and they will have to comply with what the top management wants.

h- **Difficulty of Changing Procedures:** Since the top management can overrule any procedure or policy they want, the top management does not see that changing the policies and procedures, or at least documenting the new procedures, as one of their priorities. Therefore, it is very difficult to convince the top management to change these procedures since they do not need to or do not want to document any type of wrongdoing they are in.

4- Environment:

a- Offices are Open.

b- Shared Offices.

c- Small working area for the Compensation Department.

The above 3 points show that the working environment is not very suitable for the staff of GUI to work in. This is because there is very small area to move around. Due to the small space for the staff to move around in, they feel constrained in their workplace. In addition, the offices are open and have a shared office policy. This takes away the privacy needed and creates a feeling of being observed all the time which can be uncomfortable and distracting.

On that account, all of the above-mentioned factors have led to the problems that GUI is facing in terms of payments timeframe and acceptance of new regulations to overcome the problems.

Delays in Car Maintenance

There are 3 main causes that currently lead to the delays in repairing the wrecked cars as shown in Figure 9.

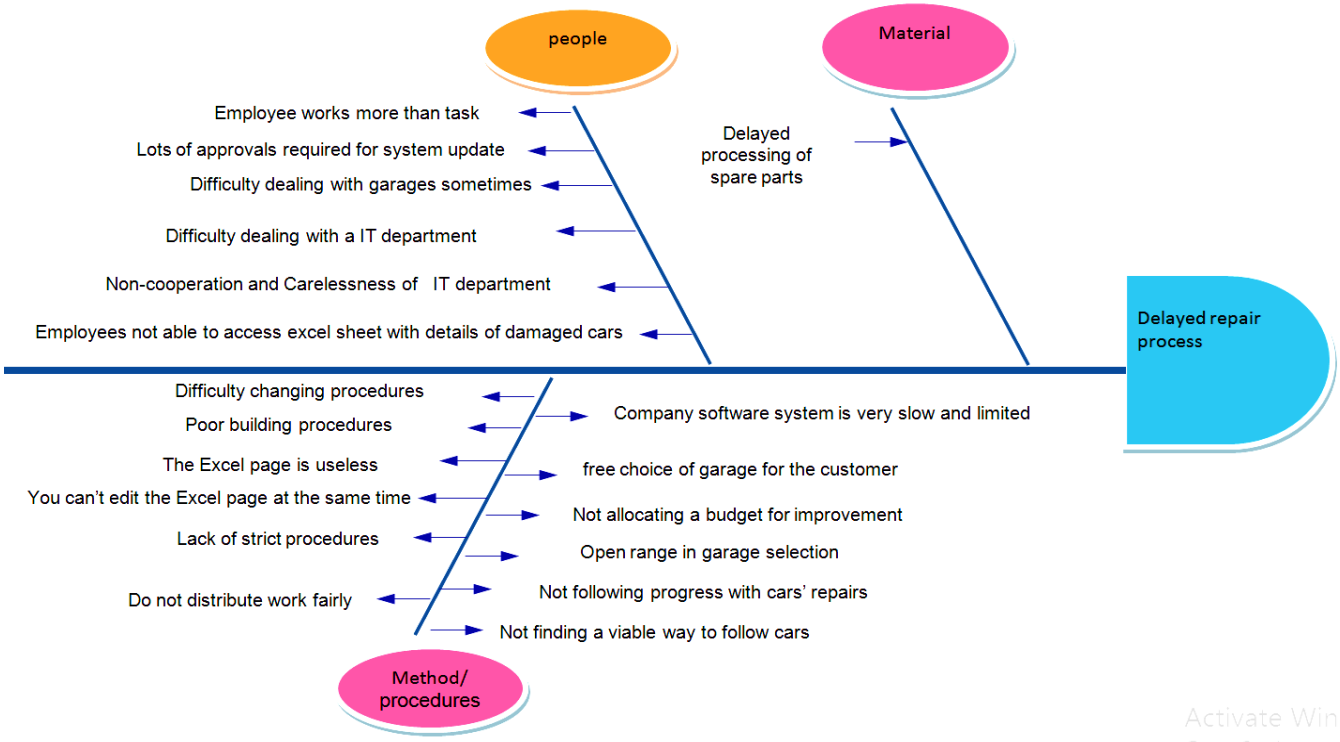


Figure 9: cause and effect diagram for delayed repair process

1- **Materials:**

a- **Delay in Processing of Spare Parts:** There is a delay in processing the spare parts that are used in the repair process. The reason is that there are many manufacturers of cars, such as Mercedes, VW, etc., as well as there are several sources of these parts,

for example, original parts, used parts, Chinese parts, etc. as well as many models of each car. Due to this huge variety, it is difficult to have all of them in the system as well as adding all of the new ones once they are used.

2- **People:**

a- **Employees are not able to access Excel sheet with details of damaged cars**: this Excel sheet cannot be accessed by the several employees who use that sheet at the same time. This will cause delays for the staff members to access this sheet and add or review the information that is in these sheets.

b- **Difficulty in dealing with repair workshops:** There are difficulties dealing with repair workshops since they have different approaches from GUI as they are not "business organized" as GUI may be. In addition, the workshops owners usually prefer not to state what will be done to fix the car until they conduct a full check of what is needed to be fixed.

c- **Employees work more than one task:** Each staff member at GUI has more than one core responsibility between the different departments. This makes the staff members overworked and having responsibilities from different departments. This leads to staff being disappointed with the management, stressed and tired, and unorganized which lead to the staff member not working properly and not even want to work properly.

d- **Many approvals for system updates:** To have any updates done to the systems that are used within the company many approvals are needed to be taken. Even though any new systems would make significant developments and higher efficiency in the workflows, some members of both management and Board of Directors are against the development ideas.

e- **The IT Department:** A difficulty exists in dealing with the IT department by other departments. This is a usual issue that many of the companies worldwide face where the IT Department's interests are different from that of the business team's interests. This is because the technical team has different approaches to the way they want to conduct their systems and operations and have the "just make it work" approach. On the other hand, the business team has more of a cost-saving approach, and wants to make processes faster and usually do not understand the technical constraints that any business process may have. Therefore, there is always a continuous feud between the two sides and rarely do they agree on one mean of action.

3- **Methods and Procedures:**

a- **Company's software is slow**: The systems that are being used and the infrastructure that is supporting these systems are old and out-dated. Therefore, access to these systems and conducting the different operations on these systems are causing many delays as the process of getting the information needed from these systems is slow.

b- **Lack of allocated funds**: There is a lack of funds allocated for development in general which means that there are no funds allocated for the development of the different systems that are used. Hence, the company usually considers to continue using the current systems till they are completely depleted. This causes even a greater cost to transfer to a new system since there will be a huge gap between the levels of technologies between the old and any new system that is instated.

c- **Limitations of company software:** The system software that is being used by GUI is old, and as stated, the infrastructure that is supporting these systems is also out-of-date. Therefore, the software does not have the options needed to fully support the

modern operations and services that the company wants to provide. This causes the unavailability of the needed information on the spot as well as difficulty in dealing with the system as a whole since it is not properly developed and is not user friendly.

d- **Wrong distribution of tasks:** The responsibilities are not distributed properly amongst the team. Some have more responsibilities and workload than others causing some tension between the team members.

e- **Poorly built procedure**: The procedures and policies that are used at GUI are outdated and not fit for the modern services that the company is trying to provide. In addition, as the operations change over the years and new services are provided by GUI, the company does not update these procedures accordingly and introduce new procedures for the new services.

f- **Lack of strict procedures:** As stated in the previous 2 points, the procedures that are being used by GUI are not efficient as well as the company is full of bureaucracy. This leads to the top management feeling that they have the authority to overrule these policies and procedures and go against them. This made the team feel that regardless of the procedures placed, they will eventually be overruled and they will have to comply with what the top management wants.

g- **Difficulty of changing procedures:** Since the top management can overrule any procedure or policy they want, they don't see that changing the policies and procedures, or at least documenting the new procedures, as one of their priorities. Therefore, it will be very difficult to convince the top management to change these procedures since they do not need to or do not want to document any type of wrongdoing, they are in.

h- **Free choice of repair workshops for the customer and open ranges for repair workshops:** There is no strict policy that regulates what repair workshop each type of damage should be sent to. This means that each car could go to different workshops, making it difficult for GUI to deal with several different repair workshops for a particular type of damage. In addition, the customer can interfere in the decision on which workshop they would like to have their car fixed in. This causes delay since not all repair workshops provide GUI with the necessary paperwork once the maintenance is done. Due to this, the workshop owner or the customer will have to go through the process of obtaining needed documentation, such as invoices, repair reports, etc.

i- **Not following up on the condition of the car:** GUI's staff do not continue checking on the cars that are in maintenance on a timely manner. This causes the car to stay in the repair workshop for longer time than needed since either the car is repaired and is not collected immediately or the workshop owner takes his time in repairing the car and gives priority to other cars whose owners will pay immediately in cash.

j- **No viable way to follow up on cars' status:** There is no particular process nor system where the employees of the GUI can track the car and the progress that is made to the car.

k- **Use of Excel sheets to track and document the processes**: Currently the company is using an Excel sheet to put the details of the damaged cars and their repair processes. This process is very inefficient since the Excel sheet is not a correct way to save information regarding these repair processes. It is not a proper database system nor does it make the correct backup and saving processes.

As can be seen here, there are several sub-causes that are the same as those for the delays in the payment process. They are mostly internal operations and system-related causes. In addition, there are a few more causes that are related to the different number of repair workshops the company has to deal with. Therefore, all of the causes and sub-causes are all part of the delay in the cars repairing process.

5.3 Surveys' Results and Analysis

As stated earlier, there were 2 surveys conducted to understand both, the customers' and the repair workshops owners' point of views.

The surveys that were conducted are analyzed to understand the impression that the repair workshops owners and customers have on GUI.

5.3.1Customers Survey

In this section, an analysis is conducted on the 20 questions surveys that were provided to the customers to answer. One file was chosen from every 3 repair files from the beginning of the year 2019 until the end of April.The analysis for each question is given below.

Q1-How many insurance companies did you deal with?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
only GUI	12	40%	40%
2 companies	6	20%	60%
>2 companies	12	40%	100%

The table above shows that 40% of the customers have only dealt with GUI, while 20% of them dealt with 2 insurance companies including GUI, and 40% with more than 2 insurance companies including GUI also.

Q2- The region in which you insure

	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
Ramallah	27	90%	90%
Nablus	1	3%	93%
Hebron	1	3%	97%
Bethlehem	0	0%	97%
Other	1	3%	100%

As we can see in the table above, most of the customers insured in the Ramallah region.

Q3-The reason for choosing GUI Company?

Totals	**37**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
appropriate prices	3	8%	8%
providing services quickly	11	30%	38%
settlement of claims fairly	3	8%	46%
representatives initiative	2	5%	51%
advice from a friend dealing with insurance	18	49%	100%

The table above shows 8% chose GUI because of their appropriate prices, while 30% because they provide fast services, 8% because they settle claims fairly, 5% representatives' initiative for

providing explanation and advices regarding their insurance products, and finally 49% because they were recommended from a friend who dealt with GUI.

Q4- How long ago was the latest dealing between you and GUI Company?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
6-12 months	30	100%	100%
>6 months		0%	100%
<2 years		0%	100%
>2 years		0%	100%

The above table shows that all cases were new interactions between the customers and GUI Company which were less than 12 months ago, this is evidence that all transactions were new.

Q5- The period in which you have dealt with GUI?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
less than one year	5	17%	17%
1yrs-<3yrs	8	27%	43%
3-5 yrs	6	20%	63%
more than 5yrs	11	37%	100%

The table above shows that 37% have been dealing with GUI for more than 5 years, 20% for 3-5 years, 27% for 1year to less than 3 years, and 17% they are new to the company.

Q6-How many visits have you made since the beginning of the insurance policy with the company?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
less than5 times	22	73%	73%
5-10 times	5	17%	90%

11-15 times		0%	90%
15	3	10%	100%

The table above shows 73% visited the company less than 5 times, %17 between 5-10 times, and 10% 15 times.

Q7- Do you agree that GUI is an easy-to-deal-with company?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
strongly agree	1	3%	3%
agree	23	77%	80%
neutral	5	17%	97%
not agree		0%	97%
Never approved	1	3%	100%

The table above shows that 3% strongly agree with the ease of dealing with GUI, 77% agree, 17% are neutral, and 3% Do not agree.

Q8-Do you agree that the employees of the services center reply to your queries in a quick manner?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
strongly agree		0%	0%
agree	20	67%	67%
neutral	8	27%	94%
not agree	2	7%	100%
Never approved		0%	100%

The table above shows 67% agree that the staff provided a quick response, 27% are neutral, and 7% do not agree that the service is quick.

Q9-How satisfied are you with the speed of receiving the company's service?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	1	3%	3%
satisfied	16	53%	57%
neutral	10	33%	90%
dissatisfied	3	10%	100%
never satisfied		0%	100%

The table above shows 3% are very satisfied with the service duration, 53% are satisfied, 33% are neutral, and 10% are dissatisfied.

Q10-Do you agree that the company follows up with customers' complaints efficiently?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
strongly agree	1	3%	3%
agree	9	30%	33%
neutral	17	57%	90%
not agree	2	7%	97%
Never approved	1	3%	100%

The table above shows that 3% strongly agree that the company follows up on complaints efficiently, 30% agree, 57% are neutral, and 7% do not agree. While 3% do not approve of the follow-up process.

Q11- Do you agree that the employees are efficient in completing the procedures?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
strongly agree	1	3%	3%

agree	25	83%	87%
neutral	3	10%	97%
not agree		0%	97%
Never approved	1	3%	100%

The table above shows 3% strongly agree with the employee's efficiency, 30% agree, 57% are neutral, 7% do not agree, and 3% never approved.

Q12-How satisfied are you with the employees' support and cooperation?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	3	10%	10%
satisfied	18	60%	70%
neutral	8	27%	97%
dissatisfied		0%	97%
never satisfied	1	3%	100%

The table above shows 10% is very satisfied, 60% is satisfied, 27% is neutral and 3% is never satisfied.

Q 13-Do you agree that the communication tools are clear and easy to reach?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
strongly agree		0%	0%
agree	15	50%	50%
neutral	10	33%	83%
not agree	2	7%	90%
Never approved	3	10%	100%

The above table shows 50% agree about the clarity of communications, 33% are neutral,7% do not agree, and 10% never approved.

Q 14- How many attempts have you done to reach the service center?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
From the first attempt	8	27%	27%
From the second attempt	18	60%	87%
More than two attempts	4	13%	100%

The above table shows that 27% was from the first attempt, 60% from the second, 13% tried more than two attempts to get in touch with the Service Center.

Q 15-How satisfied are you with the clarity of how the procedures are going to be conducted?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied		0%	0%
satisfied	16	53%	53%
neutral	11	37%	90%
dissatisfied	1	3%	93%
never satisfied	2	7%	100%

The table above shows that 53% are satisfied about the clarity of the procedures, 37% are neutral, 3% are dissatisfied, and 7% are never satisfied.

Q 16- How long did it take the company to get the car repaired?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
Same day		0%	0%
two days to a week	17	57%	57%
one week to two weeks	8	27%	83%
two weeks to one month	5	17%	100%
>1 months		0%	100%

The table above shows that 57% said that it took two days to a week, 27% said that it took one-two weeks and, 17% said that it took two weeks to one month.

Q 17- How satisfied are you with the company's follow up on the car repair?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	1	3%	3%
satisfied	13	43%	46%
neutral	5	17%	63%
dissatisfied	4	13%	77%
never satisfied	7	23%	100%

The table above shows 3% are very satisfied, 43% are satisfied, 17% are neutral, 13% are dissatisfied, and 23% are never satisfied.

Q 18- How satisfied are you with the length of the repair process?

Totals	30	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	1	3%	3%
satisfied	9	30%	33%

neutral	11	37%	70%
dissatisfied	4	13%	83%
never satisfied	5	17%	100%

The table above shows 3% are very satisfied about the repairing time, 30% are satisfied,37% are neutral, 13% are dissatisfied, and 17% are never satisfied.

Q 19- How satisfied are you with the services you received through GUI?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	4	13%	13%
satisfied	18	60%	73%
neutral	5	17%	90%
dissatisfied	2	7%	97%
never satisfied	1	3%	100%

The table above shows 13% are very satisfied about the company service in general, 60% are satisfied, 17% are neutral, 7% are dissatisfied, and 3% are never satisfied.

Q 20- Are you going to renew your insurance contract with GUI?

Totals	**30**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
Yes	27	90%	90%
No	3	10%	100%

The table above shows that 90% will renew their contract with GUI, and 10% said that they will not renew their contract.

5.3.2 Repair Workshops Surveys

In this section, an analysis was conducted on the 25 questions survey that were provided to the garage owners to answer. Twenty-three repair shops were chosen out of the company's thirty-nine approved repair shops, which are the repair shops that responded to filling the questionnaire. The following tables summarize the analysis results.

Q1-Repair workshop location

Totals	**23**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
Ramallah	20	87%	87%
Nablus		0%	87%
Jenin		0%	87%
Bethlehem		0%	87%
Hebron		0%	87%
Other	3	13%	100%

The table above shows that our scope is Ramallah, as the majority of the repair workshops were from Ramallah.

Q2-Workshop category

Totals	**42**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
Cars electricity		0%	0%
Paint	16	38%	38%
Body	16	38%	76%
mechanics and fast maintenance	5	12%	88%
heavy maintenance mechanics	1	2%	90%

maintenance of car accessories	1	2%	92%
Other	3	7%	100%

The table above shows that 38% of repair workshops are painting and body repair workshops, 12% are mechanics and fast maintenance, 2% are heavy maintenance and maintenance of car accessories.

Q3- Your designation

Totals	**23**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
Owner	18	78%	78%
officer	3	13%	91%
Repairer		0%	91%
Other	2	9%	100%

The table above shows that 78%of the people who filled the form are owners of repair workshops and 13% are officers.

Q4 -Workshop age

Totals	**23**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
<1		0%	0%
13mth-< 3years		0%	0%
3-5yrs		0%	0%
>5yrs	23	100%	100%

The table above shows that all of repair workshops are founded for more than 5 years.

Q5- How many employees do you have in your workshop?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
only one		0%	0%
2 employees	1	4%	4%
3-6 employees	12	52%	57%
>6 employees	10	43%	100%

The table above shows that 52% of repair workshops have 3-6 employees, 43% have more than 6 employees, and 4% have 2 employees.

Q6- How many insurance companies do you deal with?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
only GUI		0%	0%
GUI+another one	4	17%	17%
3 companies	4	17%	35%
>3 companies	15	65%	100%

The table above shows that 65% of the repair workshops deal with more than 3 companies, and 17% deal with GUI and another one, and 17% deal with 3 companies or more.

Q7- What is your annual earnings from dealing with GUI?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
<10000 NIS	4	17%	17%
11000-20000 NIS	3	13%	30%
21000-50000 NIS	5	22%	52%
>50000 NIS	11	48%	100%

The table above shows that 48% have more than NIS 50,000 as annual value,22% have NIS 21,000-50,000, 13% have NIS 11,000-20,000, and 17% have more than NIS 10,000.

Q8- When was the last deal between your workshop and GUI company?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
<6 months	22	96%	96%
6-12 mths	1	4%	100%
13mths-23mths		0%	100%
more than 2yrs		0%	100%

The table above shows that all cases were new dealings between the customers (workshop) and GUI.

Q9- How satisfied are you with your dealing with GUI?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	5	22%	22%
satisfied	14	61%	83%
neutral	3	13%	96%
dissatisfied		0%	96%
never satisfied	1	4%	100%

The table above shows that 22% are very satisfied, 61% are satisfied, 13% are neutral, and 4% are never satisfied.

Q10- Did you notice any changes in the services during the last year?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
positive	17	74%	74%
negative	3	13%	87%
no change	3	13%	100%

The table above shows that 74% noticed positive changes, 13% negative, and 13% said there was no change.

Q11-How satisfied are you with the accuracy of answers to your queries to GUI?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	4	17%	17%
satisfied	9	39%	57%
neutral	8	35%	91%
dissatisfied		0%	91%
never satisfied	2	9%	100%

The table above shows that 17% are very satisfied for the accuracy in replying queries, 39% are satisfied, 35% are neutral and 9% are never satisfied.

Q12-**How satisfied are you with the employees' efficiency and skills in dealing with you?**

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	11	48%	48%
satisfied	8	35%	83%
neutral	3	13%	96%
dissatisfied		0%	96%
never satisfied	1	4%	100%

The table above shows that 48% are very satisfied for employee efficiency and skills, 35% are satisfied, 13% are neutral, and 4% are never satisfied.

Q13- How satisfied are you with the duration of transaction completion?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	3	13%	13%
satisfied	4	17%	30%
neutral	9	39%	70%
dissatisfied	4	17%	87%
never satisfied	3	13%	100%

The table above shows that 13% are very satisfied with the time of completing their transactions, 17% are satisfied, 39% are neutral, 17% are dissatisfied, and 13% are never satisfied.

Q14-In the processes you're concerned with in dealing with GUI Company, how satisfied are you with the modernity of their tools?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	4	17%	17%
satisfied	9	39%	57%
neutral	8	35%	91%
dissatisfied	1	4%	96%
never satisfied	1	4%	100%

The table above shows that 17% are very satisfied for the degree of using up-to-date technicians, 39% are satisfied, 35% are neutral, 4% are dissatisfied, and 4% are never satisfied.

Q15- How much do you trust GUI company?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very confident	10	43%	43%
confident	12	52%	96%
neutral		0%	96%
not confident		0%	96%
never confident	1	4%	100%

The table above shows that 43% are very confident with GUI Company, 52% are confident, and 4% are never confident.

Q16- How satisfied are you with GUI's balanced distribution of repair jobs on repair workshops?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	2	9%	9%
satisfied	6	26%	35%
neutral	9	39%	74%
dissatisfied	4	17%	91%
never satisfied	2	9%	100%

The table above shows that 9% are very satisfied, 26% are satisfied, 39% are neutral, 17% are dissatisfied and said that they discriminate in dealings between repair workshops, and 9% are never satisfied.

Q17- How satisfied are you with the communication with GUI company?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	6	26%	26%

satisfied	8	35%	61%
neutral	5	22%	83%
dissatisfied	2	9%	91%
never satisfied	2	9%	100%

The table above shows that 26% are very satisfied with the communication in general, 35% are satisfied, 22% are neutral, 9% are dissatisfied, and 9% are never satisfied.

Q18- How satisfied are you with the speed of the GUI company's employees in answering the phone?

Totals	**23**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	3	13%	13%
satisfied	9	39%	52%
neutral	6	26%	78%
dissatisfied	3	13%	91%
never satisfied	2	9%	100%

The table above shows that 13% are very satisfied with the speed in which their calls were answered, 39% are satisfied, 26% were neutral, 13% are dissatisfied, and 9% are never satisfied.

Q 19- How satisfied are you with the complaints-submitting process?

Totals	**23**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	1	4%	4%
satisfied	13	57%	61%
neutral	7	30%	91%
dissatisfied		0%	91%
never satisfied	2	9%	100%

The table above shows that 4% are very satisfied with the way of submitting their complaints, 57% are satisfied, 30% are neutral, and 9% are never satisfied.

Q 20-How satisfied are you with the speed in which your complains were tended to by GUI company?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	3	13%	13%
satisfied	10	43%	57%
neutral	8	35%	91%
dissatisfied		0%	91%
never satisfied	2	9%	100%

The table above shows that 13% are very satisfied with the time frame of replying to the complaints, 43% are satisfied, 35% are neutral, and 9% are never satisfied.

Q21- What is the frequency in which you submit your bills to GUI Company?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
each invoice on time	12	52%	52%
each invoice but not on time	3	13%	65%
two bills		0%	65%
3-5 bills	7	30%	96%
6-9 bills	1	4%	100%
10 bills		0%	100%

The table above shows that 52% introduce each invoice on time, 13% introduce each invoice but not on time, 30% introduce every 5-3 invoices together, and 4% introduce 6-9invoices together.

Q22- What was longest duration you had to wait for GUI Company to pay their bill?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
same day		0%	0%
2days-1week		0%	0%
8days-month	1	4%	4%
>1months	22	96%	100%

The table above shows that 96% of repair workshops said that the longest payment period for their invoices took more than 1 month and 4% said that it took 8 days -1 month.

Q23- What was the shortest payment period for your invoice?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
same day	1	4%	4%
2days-1week		0%	4%
8days-month	10	43%	48%
>1months	12	52%	100%

The table above shows that 52% repair workshops said that the shortest payment period for their invoices took more than 1 month, 43% said that it took 8 days -1 months, and 4% said that it had been paid in the same day.

Q24-How satisfied are you with the transaction completion procedure?

Totals	23	100%	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	3	13%	13%
satisfied	5	22%	35%
neutral	7	30%	65%
dissatisfied	4	17%	83%
never satisfied	4	17%	100%

The table above shows that 13% are very satisfied with the ease of completing the financial procedures, 22% are satisfied, 30% were neutral, 17% are dissatisfied, and 17% are never satisfied.

Q25- How satisfied are you with the payment of financial dues speed?

Totals	**22**	**100%**	
Category	**Frequency**	**%**	**Cumulative %**
very satisfied	1	5%	5%
satisfied	1	5%	9%
neutral	6	27%	36%
dissatisfied	6	27%	64%
never satisfied	8	36%	100%

The table above shows that 5% are very satisfied with the dues payment speed, 5% are satisfied, 27% are neutral, 27% are dissatisfied, and 36% are never satisfied.

Through the continuous work in the company and the meetings with many customers and employees, another reason for dissatisfaction was observed by customers and even some employees, which is the speed of providing spare parts to repair workshops for the maintenance. Then, another survey was done to find out the rate of dissatisfaction with this process, and the results were as in Figure 10.

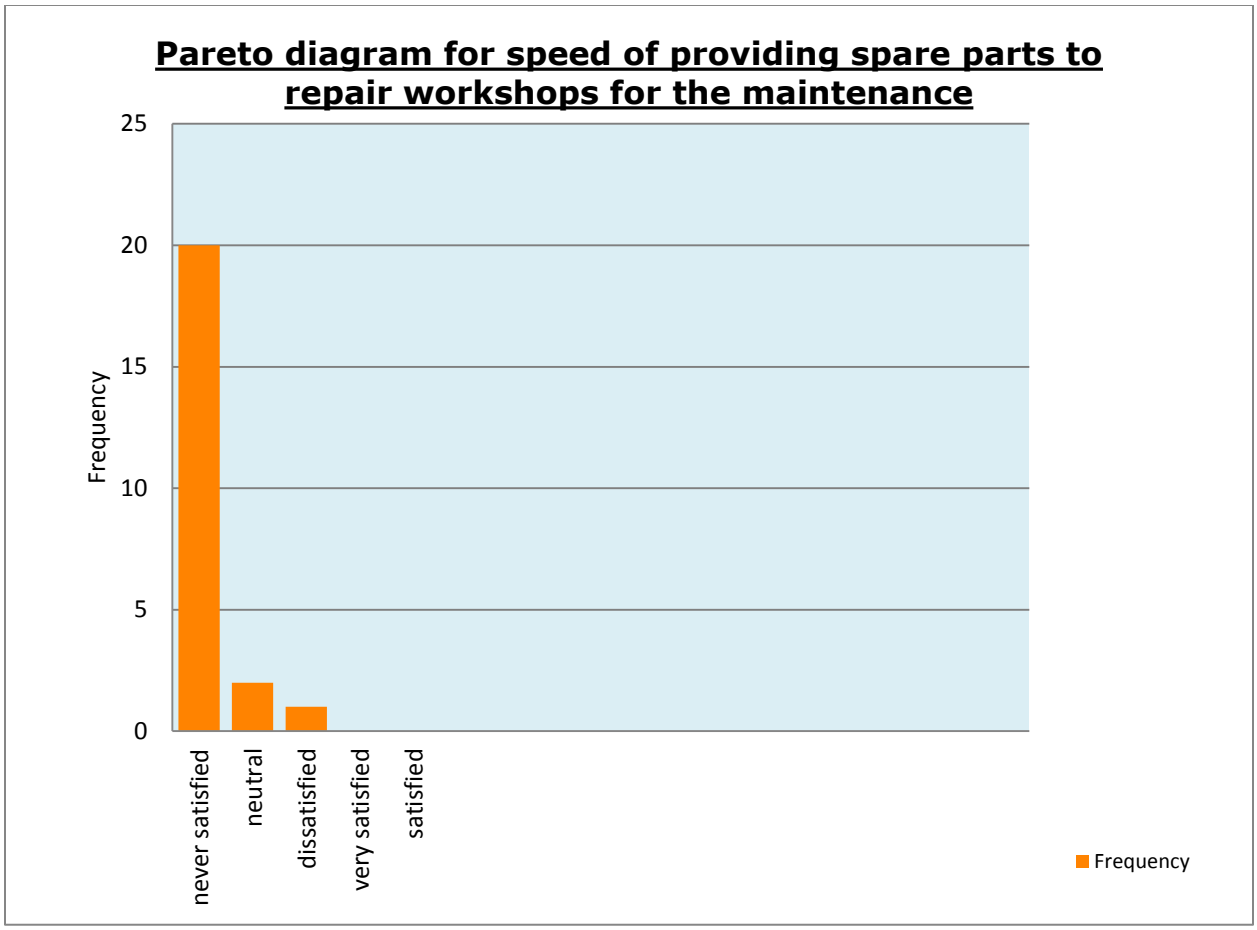


Figure 10: Pareto diagram for speed of providing spare parts to repair workshops for the maintenance

As shown in Figure 10, 87% of the customers were never satisfied with the speed of delivering the parts to the repair workshops. While 9% were neutral and 4% were dissatisfied. This shows that the majority of the customers are never satisfied with the speed that the parts are delivered to the repair workshops. This is one of the main reasons why there are delays with providing the customers with their cars on time. The reason for the delay in providing spare parts is that GUI tries its best to obtain the cheapest parts possible to decrease cost on itself. In addition, the delay could be because the suppliers do not provide these spare parts in time as well. Therefore, this

should be one of the main points that GUI should resolve to be able to make the process of repairing the car faster for its customers.

Chapter 6

Discussion of Results

Chapter 6

Discussion of Results

6.1Introduction

This chapter revises the results of the analysis that was conducted in the previous chapters. Moreover, it discusses the outcomes and provides an introduction to the recommendations that are reviewed in the next chapter.

The DMAIC approach is a very important methodology within LSS to find and remove the wastes that are in the processes. The analysis that was conducted in the previous chapters clearly shows that there are several inefficiencies in the processes within the company. This allows a strong base to determine where to start to fix and improve these processes.

The analysis shows that the customers are not satisfied with the delays in collecting their cars after they are repaired. The time it takes to have the cars repaired is too long and does not meet customers' expectations. There are delays in the decision making from GUI on what should be repaired in the cars and to which workshop the car should be sent to. In addition, there is a very critical delay because it takes a long time for the repair workshops to collect the parts and conduct the needed repairs after they are received. This delay is because there is no exact supplier for these parts and the repair workshops obtain these parts from different sources. Therefore, this clearly states that the delays are due to not having specific parts' providers and a long time is spent for assigning the cars to the corresponding workshop for repairs.

The second part of the research that is being analyzed also shows that there are critical delays in the bill payment process. The delays are due to two reasons, delays from the workshop in providing the correct invoices on time, and the second reason is that GUI is taking a long time to pay these bills because of reviews and follow-up within the financial department. This causes mistrust and other disappointments with the stakeholders who are waiting for these funds to be received, which are usually the repair workshops. This causes reputational risks for GUI since the repair workshops and the other stakeholders will be reluctant to deal with GUI since they know that they will be late in providing their payments.

The general disappointment from the customers and the repair workshops can cause loss of entities dealing with GUI. This will cause a decrease in GUI's customers base, hence leading to decrease in revenues. Also, a decrease in repair workshops dealing with GUI will make it difficult for GUI to repair the customers' cars since they will have to look for replacements for the lost repair workshops and also have to assure that these customers will provide the services in the quality that is wanted.

6.2 Discussion of Results with GUI's Management

Using LSS was expedient in finding the inefficiencies that GUI was having within its processes. Other means of analysis might have not been as efficient as LSS is in finding the causes of these inefficiencies.

Since the problems have been identified, measures should be taken to amend these inefficiencies and make the processes more efficient. The management should be serious in implementing the

developments that are recommended in Chapter 7 to assure that the company does not continue to lose money and effort while remaining on the same way of conducting business.

The reason that the outcomes of this research will not be implemented immediately is that the management of GUI wants to gradually introduce the amendments needed based on the outcome of this research. The staff that are currently working at GUI has been working with the current processes for many years and has been accustomed to the current procedures. Therefore, the management decided to make gradual changes so that they do not shock the staff with all of the changes made at once. This will allow the staff to get accustomed to the changes and not be a force against these changes as they will not feel intimidated of all the changes at once.

Meetings were conducted with GUI's management to explain all of the analyses that were conducted and the outcomes of the analysis. The GUI management have shown their commitment in having the changes made within the processes.

If GUI is able to implement the developments in the processes as per the recommendations stated in Chapter 7, they will be the first insurance company in Palestine that has developed their key processes using LSS. This would be a great step by GUI, allowing them to set an example for the other service companies in Palestine.

In addition, once these developments are instated within the company, and it is proven that these developments have made the processes more efficient, there should be controls placed to assure that these developments are kept. Such controls are explained in Chapter 7 since these controls have to be managed by the management of GUI.

Chapter 7

Conclusions, Recommendations, and Future Work

Chapter 7

Conclusions, Recommendations, and Future Work

7.1 Conclusions

In this research, the following 3 main problems at GUI were discovered:

- Delays in payments for the repair workshops.
- The long time of the repair process, so delays in handing over cars to their owners.
- Delays of providing spare parts to repair workshops for the maintenance.

These problems led to having unsatisfied customers and wasting a lot of time. To solve these problems, the root cause of each problem was studied and tools were used to help overcome these problems and make sustainable results.

The problems were first defined by using SIPOC for the first and second main problems and it helped in understanding the process by breaking it down to inputs, suppliers of these inputs, outputs, customers, result measures, detailed information about the steps including the process measures, goals and sources of variation.

By doing that it became easy to understand and identify the problems that happen within the process.

After understanding the problems that the organization are facing from what was found in the SIPOC analysis conducted earlier, the Project Charter tool was used for the first and second main problems to understand the scope, objectives and the participants in the project in order to increase the efficiency of the company and to show the responsibilities of the general manager and the stakeholders of the organization.

This has allowed better understanding of the problems and the next step was to move to the measuring phase where tools like Flow Chart and Eight Wastes were used.

The Flow Chart tool gave a detailed overview of the sequence of the processes in the compensation department and has indicated that the 3 problems found are the main problems of the organization.

The Eight Wastes tool highlighted the wastes in the processes studied by identifying the inefficiencies and obstacles in every step of these processes.

After the measuring phase was completed, the cause and effect diagram tool was used to help in understanding the root causes of the first two main problems, then three surveys were distributed and used the Pareto tool to analyze the answers to each question in the surveys and by applying all that the following results were obtained:

1- By implementing the Lean Six Sigma method at GUI company, the focus became on the customer value and achieving a high level of customer focus that delivers value to both customers and the organization.

2- To eliminate waste, variation and errors in the two processes selected should be directly targeted, this way unnecessary costs are avoided.

3- All the problems are highlighted, root causes identified and recommendations made to solve delays in payment, delay in repair process and delays of providing spare parts, efficiently and effectively.

5 Develop solutions to eliminate wastes and errors. Also, shift the GUI company's culture into a customer-focused culture.

6- Implementing the Lean Six Sigma method at the compensation department improves the process performance and guarantee the sustaining of results in the long term.

In conclusion, choosing the DMAIC methodology for analyzing GUI's processes was the most appropriate methodology since it provided a very clear image of where the wastes and inefficiencies are. Also, it provided a proper structure for defining the problems, measuring the problems, analyzing the problems, and gave the correct base to improve the problems, and finally to assure that these problems are controlled and will not be an issue for the company again.

The wastes and inefficiencies that were determined during the defining and measuring phases in the two processes at GUI were the reasons for the problems that the company was facing. Also, from the analysis conducted, it showed that the customers and the repair workshops owners who dealt with GUI were dissatisfied with the delays in the services provided by GUI and they had higher expectations from GUI in being faster and more efficient in their operations.

7.2 Recommendations

Based on the outcomes of the research and identifying the wastes and inefficiencies GUI is facing, it is recommended for GUI to implement the followings:

1- GUI should assign a source for the spare parts within the Occupied Territories (Israel) who can provide the spare parts for all of the cars that are available in Palestine. This recommendation will solve the delay in obtaining the spare parts since they will be provided from one source and they are obliged to provide these parts in an agreed timeframe. This should also save up to 30% of the costs as buying all parts in bulk from one source allows the company to have better prices than collecting these parts from intermediaries and middlemen. (Almimi, 2019). This will increase the customer and repair workshops owner satisfaction of the company since the spare parts will be

provided faster (the customer will receive their car sooner and the workshop owner can finish from the repair process faster) and will save the company money as the parts will be cheaper.

2- Arrange the financial operations to have the payments for the repair workshops paid on a weekly basis instead of the monthly basis. This should speed up the payment process, which will increase the satisfaction of the workshop owners since they will be receiving their payments in a faster manner.

3- To provide some of the financial team staff authority to approve payments that are below ILS 5,000.00 (around USD 1,450.00) since this will speed up the payments for the simple accidents and will decrease the traffic of applications with the higher management. This will not have much risk on the company since the amount is considered low in comparison with the average cost of repairs, and there is not much benefit of delaying such small payments.

4- To reorganize the operations within the Compensations Department, making the workflow, authorities, and responsibilities clearer so that the operations can be done in a more efficient manner. In addition, creating an additional process within the department where they are to advise the customer of the updates on the repair process that is being done to their cars. This will increase the customers' satisfaction since they will be aware of what is happening to their cars at all time and will be able to organize their transportation routes until they receive their cars.

5- Assure that there are no operations that are not conducted through the AIMS application (the database interface system that is used by the company). This is important since it will

assure that all of the cases are well documented and that the information is safe and cannot be manipulated with. In addition, this will allow all of the certificates or reports that are generated by the company to be extracted through the system since it will also be properly documented.

6- Provide some of the staff who are in direct contact with the customers and workshop owners with access to direct messaging applications such as WhatsApp so that it can ease the transfer of information and pictures that are related to the accident and the repair process. This would be a faster way of contact between the different parties and more direct as well.

7- Rearranging the office furniture to be able to give the staff better privacy as well as proper space management to make movement more efficient.

8- To separate the operations between the injuries and the car damages.

9- Creating a bill tracking system that tracks the status of the bills and the payment process.

10- Creating a Customer Complaint system that will manage all of the complaints and suggestions of the customers. In addition, to create the proper team to follow-up on these complaints and suggestions to assure that they are attained to.

11- Create a proper system that tracks the maintenance process of the car so that the GUI employees can update and follow-up on the maintenance process of each car to assure that there are no delays in the process.

12- Creating a sub-system that provides the customers with the ability to track the repair process to their cars. This will be connected to the main system that tracks the car maintenance process within the company’s systems.

7.3 Additional Recommendations

There are other recommendations that GUI should take into consideration as well, but are not related to the Lean Six Sigma analysis that was conducted. These recommendations can enhance the customer's experience when dealing with GUI, making the customers more loyal to the company and can give GUI competitive advantage over the other insurance providers in Palestine. These are as follow:

1- Return Car Service: this service could be added where GUI will deliver the car to the customer once the maintenance is done. This would include that the car to be cleaned and provided with some branded gifts, such as a branded tissue box, branded air freshener, branded key chain, etc.

2- Follow up Call: After two weeks from providing the customer with the car, GUI should reach out to the customers to see if there are any complaints regarding the maintenance that was conducted. This is to assure customer satisfaction as well as assuring that the maintenance was conducted properly.

3- Tangibles: The waiting area for the customers should be arranged in a better manner that it is currently in. The waiting area should be a place where the customers could wait in a relaxed manner as well as an area where they could collect further information about the company and their services before they deal with any of the company's employees. The current furniture should be replaced with more relaxing furniture and also should be in the colors of GUI's brand. The waiting area should also have a queue ticket dispenser so that the customers know their turns and can be served based on who arrived at the company first. In addition, there should be a selection of hot drinks, such as coffee and tea for the customers to be able to drink during their wait for their turn.

These items might not be directly related to the inefficiencies that GUI is facing which were studied in this research, but are critical items that should not be disregarded as they will surely add to the customer's satisfaction.

7.4 Future Work and Controls

As stated earlier in the research, GUI's management are not intending to conduct the above stated recommendations at once. The management also advised that they want to conduct the changes on their terms and do it in a gradual manner since they would like to assure that their staff will accept the changes made in the processes.

The management will gradually conduct the changes to the processes in a strategic manner in a way that also does not cause any discontinuity in their operations. The management will first conduct the changes that are related to the work environment, by restructuring the offices to provide proper privacy for their employees while assuring the smoothness of the workflow. This should increase staff moral as well as make them like the work environment more. In addition, the management will also begin to conduct the training courses for the staff to increase their productivity as well as developing them into the proper mindset to accept the new changes.

Secondly, the management will begin to work on the new billing system and install it once it is ready. The old system will be kept as a backup as well till the new billing system shows that it fully capable of handling all of the financial operations, and making it go live. In addition, they will begin the internal staff restructuring by providing proper responsibilities, job descriptions, and authorities that suit the development of the processes within the company.

Thirdly, the management will then create the tracking systems for both, the company and the customers, and create the communication lines between the company and the stakeholders. These

systems will also be tested to assure proper functionality as well as testing how these systems are interconnected and if the changes are reflected on the systems in the proper manner.

Finally, the management will create the needed relations and agreements with the wanted parts providers, who will provide great quality parts with cheaper prices than the retails who they are currently obtaining parts from.

During this process, the management will always conduct the monthly meetings that will assure the development of the changes as well as assurance that once the new developments are instated that there are no future inefficiencies within the processes that were changed.

7.4.1 Controlling Developments

The Control Phase is the final phase of Lean Six Sigma where there are plans placed to assure that the improvements that were instated are well-maintained throughout the period of time till the processes are changed again. It also gives a plan where if there were any future deviations from the improvements that were placed, what are the actions that should be taken to transfer the processes back to the correct path.

Since the deployment of the changes will be made by GUI's management, controlling of these developments will also be done by the management of GUI as well. The framework and the manner of controlling the processes will be detailed to the management of GUI so that the controls will be kept to standard and assure that there is no deviation from the standards that was placed during this research.

7.4.2 Monitoring Controls

There are several tools that should be used by the management of GUI to observe if there are any changes within the processes that were improved. These tools should be:

1- **Feedback Surveys:** Customers should be provided with feedback surveys after the maintenance so that their feedback is collected to see if they are satisfied with the services that are being provided using the survey designed for this purpose as shown in Figure 11. This also allows GUI to see if the cars are being repaired in the time that was advised to the customer, in addition, to see the customer's opinion where they can advise if there are any other changes that should be made to the repair process.

Figure 11: After maintenance survey

This feedback system should be reviewed on a weekly basis where there should be a designated staff member/team to review the inputs of this system and create reports of the feedback that was provided by the customers. These reports should be provided to the higher management as well for their review. These reports should be consolidated on a

quarterly basis and be presented to the Board of Directors of the company detailing the actions that were taken on the different feedback items.

2- **Operations and Financial Meeting**: Monthly meetings should be conducted with the operations team, finance team, and the management of GUI where the repair processes should be analyzed as well as the billing system. Reports should be made to demonstrate the repair processes that were conducted and how far they are from the mean time needed to have such repairs conducted. The same goes for the payment of the bills where the bills should be reported to see the time taken to have the bills paid is close to the average time needed to have similar bills to be paid. These reports should also be consolidated and provided to the Board of Directors for their review. These meetings should also consist of brainstorming sessions to see what that the technical developments are happening in the market and how can they use these developments for their benefit. An Out of Control Action Plan (OCAP) is made to follow-up on the controls that are in place where it provides an action plan for when there are diversions from the standards that were place when making the processes more efficient. The table in Figure 12, is the OCAP that GUI should have in place for the developed process:

Deficiency Description	Process Step	Responsibility	Specification Limits Requirement	Response Plan / Actions to be taken	Resources
Delay in car maintenance	Car Delivery	Car Accident Department	Must be provided on date agreed	Arrange with workshops to finish as soon as possible or else be fined for each day delayed	Car Accident Department employee / Workshop Owner
Unsatisfactory maintenance	Finishing the repair process	Car Accident Department	Specifications and quality in the repair order	Make workshop to repair as per the standards agreed on	Car Accident Department employee / Workshop Owner
Delay in Bill Payment	Paying Bill	Finance Department	Must pay bill within 1 working day	Paying Bill immediately after assuring all repairs are done	Finance Department

Figure 12: Out of control action plan table (OCAP)

Finally, GUI should conduct Lean Six Sigma analysis every two years to see if there are any inefficiency that may occur or develop within those two years. This will allow GUI to have a more scientific approach to the way they analyze the processes that they will be reviewing.

Appendix A

استبيان لقياس رضى الكراجات التي يتم التعامل معها في الشركه العالمية المتحدة للتأمين

بيانات الكراج (اختياري)

1) موقع الكراج ؟

- رام الله و البيره
- نابلس
- جنين
- بيت لحم
- الخليل
- اخرى(----------)

2) فـــــــئه الكراج

- كهربائي سيارات
- دهان
- بودي
- ميكانيك وصيانات سريعه
- ميكانيك صيانه ثقيله
- صيانه كماليات سيارات
- اخرى(----------)

3) الوظيفة في الكراج

- صاحب العمل
- مسؤول الكراج
- مصلح
- اخرى (----------)

4) مده افتتاح الكراج؟

- اقل من سنه
- من 13شهر الى اقل من 3 سنوات
- من 3-5 سنوات
- اكثر من5 سنوات

5) كم عدد الموظفين في كراجك؟

- انا فقط
- موظفين
- من 3- 6 موظفين
- اكثر من 6 موظفين

6) كم عدد شركات التأمين التي تتعامل معها؟

- الشركه العالميه للتأمين فقط
- الشركه العالميه بالاضافه لشركه اخرى
- 3 شركات تأمين
- اكثر من 3 شركات

7) قيمة التعامل السنوي مع شركة العالميه للتأمين (بالشيكل)

- اقل من 10000

- من 11000 –20000
- من 21000–50000
- اكثر من 50000

الرضى عن اخر معامله مع الشركه العالميه المتحده للتأمين (اجبارى)

8) متى كانت آخر معاملة بين كراجك او شركتك والشركه العالميه للتأمين ؟

- اقل من 6 شهور
- من 6–12 شهرا
- من 13 شهر – 23 شهر
- سنتين فأكثر

9) استناداً إلى آخر معاملة، ما مدى رضاك عن تعاملك كصاحب كراج مع الشركه العالميه بشكل عام؟

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

10) هل لاحظت تغييراً في الخدمات المقدمة في الشركة (سلبياً أم إيجابياً) في السنة الأخيرة ؟

- ايجابي (نعم / لا)
- سلبي (نعم / لا)

الرضى عن الاجراءات والمعاملات مع موظفى الشركه العالميه المتحده للتأمين (اجبارى)

11) دقة الرد على استفساراتكم؟

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

12) كفاءة ومهارة موظفينا أثناء التعامل معكم؟

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

13) وقت إنجاز المعاملات

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

14) درجة استخدام التقنيات الحديثة في إنجاز المعاملات

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

15) **ما مدى الثقه بالشركه العالميه للتأمين؟**

- واثق جدا
- واثق
- واثق الى حد ما
- غير واثق
- غير واثق ابدا

16) **تجنب التمييز في التعامل**

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

الرضى عن التواصل مع الشركه العالميه المتحده للتأمين (احصائي)

17) **رضاك عن وسائل التواصل بشكل عام**

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

18) **الهاتف**

- راض جدا

- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

19) طريقة تقديم الشكاوى

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

20) سرعة الرد على الشكاوى

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

الرضى عن عملية دفع الفواتير في الشركه العالميه المتحده للتأمين(اجبارى)

21) طريقه تسليم الفواتير للشركه؟

- اسلم كل فاتوره بوقتها
- اسلم كل فاتوره ولكن متأخر عن وقتها
- اسلم كل فاتورتين متراكمات
- اسلم كل 3-5 فواتير دفعه واحده
- اسلم كل 6-9 فواتير دفعه واحده

- اسلم كل 10 فواتير دفعه واحده

22) اطول فتره كانت لتسديد فاتوره؟

- في نفس اليوم
- من يومين ل اسبوع
- من 8 ايام – شهر
- اكثر من شهر

23) اقصر فتره لتسديد فاتوره

- في نفس اليوم
- من يومين ل اسبوع
- من 8 ايام – شهر
- اكثر من شهر

24) سهولة إجراءات صرف مستحقاتكم المالية

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

25) الرضى عن سرعه تسديد الفواتير؟

- راض جدا
- راضي
- راض الى حد ما
- غير راضي
- غير راضي ابدا

ما هي مقترحاتكم لتطوير الاجراءات والخدمات المقدمه لكم بهدف رفع مستوى الرضى لديكم؟

البيانات الشخصيه (اختياري)

26) الاســـــــــــم :

27) رقم الهاتف المتحرك:

Appendix B:

استبيان لقياس رضى زبائن الشركه العالميه المتحده للتأمين

معلومات عامه (اجباري)

1) كم عدد شركات التأمين التي تعاملت معها؟

- الشركه العالميه فقط
- شركتين تأمين
- اكثر من شركتين

2) المنطقة التي تم التأمين فيها ؟

- رام الله والبيره
- نابلس
- الخليل
- بيت لحم
- اخرى----------

3) سبب اختيار الشركه العالميه للتأمين ؟

- اسعار ملائمه
- تقديم الخدمات بشكل سريع
- تسوية المطالبات بعدل وأنصاف
- مبادرة ممثلي الشركة بتقديم نصائح تأمينية
- مشوره من صديق تعامل مع العالميه للتأمين

الرضى عن اخر معامله مع الشركه العالميه التحده للتأمين (اجباري)

4) متى كانت آخر معاملة بينك وبين الشركه العالميه للتأمين ؟

- من 6-12 شهرا
- اكثر من سنه
- اقل من سنتين
- اكثر من سنتين

5) مدة التعامل مع الشركه العالميه للتأمين ؟

- اقل من سنه
- سنه الى اقل من 3 سنوات
- من 3 –5 سنوات
- اكثر من 5 سنوات

6) عدد الزيارات التي قمت بها منذ بدايه وثيقه التأمين مع الشركه العالميه؟

- اقل من 5 مرات
- من 5– 10 مرات
- من 11–15 مره
- 15+

الرضى عن الاجراءات و المعاملات مع موظفي الشركه العالميه المتحده للتأمين (احياء)

7) يمكن التواصل مع الشركة في أي وقت بسهوله ويسر ؟

- موافق بشده
- موافق
- محايد
- غير موافق
- غير موافق بشده

8) يقوم موظفي مركز الخدمه بالرد على الاستفسارات بشكل منتظم وسريع؟

- موافق بشده
- موافق
- محايد
- غير موافق
- غير موافق بشده

9) متوسط فتره الانتظار لتلقي خدمه في الشركه؟

- راض جدا
- راضي
- محايد
- غير راضي
- غير راضي ابدا

10) تتابع الشركة شكاوى ومطالبات العملاء بشفافية وفعالية و ملاحظاتهم بإهتمام كبير؟

- موافق بشده
- موافق
- محايد
- غير موافق
- غير موافق بشده

11) يتعامل موظفي الشركه بكفاءه ومهنيه؟

- موافق بشده
- موافق
- محايد
- غير موافق
- غير موافق بشده

12) مدى التعاون الذي قدمه لاالموظفين لتقديم المشورة والدعم للعملاء ؟

- راض جدا
- راضي

- محايد
- غير راضي
- غير راضي ابدا

13) وسائل الاتصال سواء خدمة العملاء والهاتف المجاني واضحة وسهلة الوصول؟

- موافق بشده
- موافق
- محايد
- غير موافق
- غير موافق بشده

14) كم عدد المحاولات التي استغرقتها للوصول إلى مركز الخدمة؟

- من المحاوله الاولى
- من المحاوله الثانيه
- اكثر من محاولتين

15) الإجراءات والمعلومات المتعلقة بالخدمة التي تحتاجها واضحة (توزيع الكتيبات ، اعطاء ملاحظات... الخ)

- راض بشده
- راضي
- محايد
- غير راضي
- غير راضي بشده

الرضى عن عمليه تصليح السيارات فى الشركه العالميه المتحده للتأمين (اجباري)

16) **متوسط الفتره التي تستغرقها الشركه لتصليح السياره ؟**

- في نفس اليوم
- من يومين الى اسبوع
- من اسبوع ل اسبوعين
- من اسبوعين ل شهر
- اكثر من شهر

17) **علمك بجميع التطورات وحالة السياره خلال فترة التصليح؟**

- راض بشده
- راضي
- محايد
- غير راضي
- غير راضي بشده

18) **الرضى عن الوقت المستغرق في عمليه التصليح؟**

- راض بشده
- راضي
- محايد
- غير راضي
- غير راضي بشده

19) **الرضى العام عن تقديم الشركه للخدمات من خلال تجربتك؟**

- راض بشده
- راضي
- محايد

- غير راضي
- غير راضي بشده

20) هل ترغب في تجديد العقد للسنه القادمه مع الشركه العالميه للتأمين؟

- نعم
- لا

ما هي مقترحاتكم لتطوير الاجراءات والخدمات المقدمه لكم بهدف رفع مستوى الرضى لديكم؟

البيانات الشخصيه (اختياري)

21) الاســـــــــم :

22) رقم الهاتف المتحرك:

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الملخص

لسنوات عديدة سعت العديد من المؤسسات الى تقليل التكاليف التي تتكبدها من عملياتها حيث سيؤدي ذلك الى زياده الربح لدى الشركات. لتكون قادرة على تحقيق ذلك بشكل صحيح ، تم إنشاء منهجيه لين سته سيجما، والتي يتم استخدامها حاليًا من قبل العديد من المؤسسات في جميع أنحاء العالم لمساعدتها على زيادة كفاءة عملياتها وكذلك التخلص من الهدر. لين سته سيجما هي منهجية تحسين تزود المؤسسات بإطار كامل لجعل عملياتها أكثر كفاءة وفعالية.

تكمن أهمية هذه الدراسة في استخدام لين سته سيجما للتخلص من الهدر في عمليتين رئيسيتين مختارتين في شركة العالمية المتحدة للتأمين (GUI) ، وهي من اشهر شركات التأمين الفلسطينيه. الهدف من استخدام هذه المنهجيه في هذه الشركة هو تسريع كل من عملية دفع الفواتير لورش إصلاح السيارات وكذلك تسريع عملية إصلاح السيارات المتضررة وايضا التسريع من عملية توفير قطع الغيارات. تم استخدام منهجية DMAIC الخاصة بـ لين سته سيجما لتحقيق هذه الأهداف ,حيث تم تحليل العمليات وتحديد الأسباب الجذرية للمشاكل وعدم الكفاءة.

تم جمع البيانات والمعلومات التي تم استخدامها للتحليل من خلال الاستبيانات التي وزعت على العملاء وأصحاب ورش إصلاح السيارات. بالإضافة إلى ذلك ، تم إجراء المقابلات مع العديد من الموظفين في الشركه من أجل جمع المعلومات حول العمليات وكذلك لفهم انطباعاتهم ومطالبهم.

تم استخدام العديد من الأدوات مثل Project charter ، SIPOC، Fishbone، Pareto Flowchart، 8 waste,لتحليل العمليات وتحديد أسباب الهدر داخل الشركة. بعد إجراء التحليل تم تزويد الاداره العليا بتقرير بالتوصيات التي يجب أن تتخذها الشركه لتطوير عملياتها وجعلها أكثر كفاءة. كان أحد التحديات الرئيسية التي تمت مواجهتها هو إقناع اداره الشركه بإدخال التغييرات والتطورات في العملية، وأعربوا

عن مخاوفهم من مقاومه الموظفيين للتغيرات في حال تمت دفعه واحده. في نهاية المطاف، وعدت الإدارة بأنها ستنفذ التوصيات التي تم تقديمها ولكن تدريجيا.