

**THE REPUBLIC OF TURKEY
BAHÇEŞEHİR ÜNİVERSİTESİ**

**PROCESS IMPROVEMENT and an INDUSTRIAL
EXAMPLE OVER COMPANY BSH**

MASTER THESIS

ÖYKÜ ER

ISTANBUL, 2016

**THE REPUBLIC OF TURKEY
BAHÇEŞEHİR ÜNİVERSİTESİ**

**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
INDUSTRIAL ENGINEERING**

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ABSTRACT

PROCESS IMPROVEMENT AND AN EXAMPLE OVER BSH

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As the world is getting more and more competitive because of the fast changing environment, technology and globalization; innovation becomes the most important feature to survive in the market place. In this environment, companies need to work on continuous and sustainable innovations. The base of these innovations is to work on their processes as the massive innovations and improvements can only be done by it. In that matter, process improvement as analysing the processes, defining the goals and improving the processes according to these goals by the needs is highly important. In this thesis, process term and process improvement methodologies will be analysed with the literature review as well as analysing the advantages and the methodologies of process improvement. Lastly, a project will be analysed as an example to review how these improvements work in real life by the steps and conclusions.

Keywords: Process, Process Improvement, Innovation, BPI

ÖZET

SÜREÇ İYİLEŞTİRME VE BSH ŞİRKET ÖRNEĞİ

Öykü Er

Endüstri Mühendisliği

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Hızlı değişen çevre koşulları ve pazar dinamikleri, teknolojinin hızlı gelişimi, küreselleşme gibi etmenlerden dolayı dünya gitgide daha rekabetçi bir hal almaktadır. Bu ortamda, markette varılmaya devam edebilmenin en önemli ve etkili yolu sürekli ve düzenli inovasyonlarda bulunmaktır. Bu inovasyonların temeli, şirketlerin süreçleri üzerinde çalışmalarından ve planlarını bu doğrultuda belirlemelerinden geçer. Bu açıdan, süreçleri incelemek, hedefleri ve amaçları belirlemek ve de buna bağlı olarak süreçleri geliştirmek çok önemli bir hal almaktadır. Bu tezde, süreç kelimesinin anlamı ve de süreç geliştirme metodolojileri ve de bu metodolojilerin avantajları ve dezavantajları ile literatür taraması yapılacaktır. Son olarak BSH şirketinde yapılmış olan süreç geliştirme projesi incelenecek ve de literatür taramasında incelenen konuların gerçek yaşamdaki uygulaması detaylandırılacaktır.

Anahtar Kelimeler: Süreç, Süreç Geliştirme, İnovasyon, Yenilik

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1. INTRODUCTION

“Change is the word that best characterizes the nature of modern society and determines the challenges that managers and leaders face daily.” (Charron, Harrington, Voehl, Wiggin, p. 61). Change is essential in order for the companies to survive and yet be successful. Companies need to change in order both to keep up with the changing world due to improvements in technology and react to and adapt the changes.

Technology has been improving for the last few decades. Improvement in technology has effects on many areas such as everyday lives, social structures and communication. However, technology’s effect on business brings the major changes since it is directly linked to capital movement and money. These changes bring the need of process improvement and optimization in the companies.

Due to improvements in technology, companies feel the need to improve their processes firstly because the competition increases, secondly because improving technology makes processes more complicated. Increase in technology gives the chance to many companies to grow and increase their market share as well as the local global companies challenging the local ones which increases the competition between companies. Accordingly, companies feel the need to improve their software and operational processes so that they can save up more money and increase their revenue. Technology also makes processes more complicated since all the processes would be done on softwares and be linked to each other (Reid and Sanders, p. 3).

In the improvement of processes, companies work on the problems in the process and the overall problems to be improved. They can model an alternative process which has improvements on the existing one. In order to decide on if the alternative process is better than the existing one, company takes process measures into account to compare and contrast and decide accordingly. Process measures can be time, cost, quality and in order to make the decision, these measures need to be considered in a way to decrease business

management process (BPM) and the other costs with the trade off with other measurements as to accomplish the overall goal (Bolsinger, p. 357).

Companies push their employees to be more process oriented as they are required to focus on the big picture; not just on a single function. That way, employees are put in groups according to horizontal grouping; not on functional departments. As the companies are being process oriented, process is becoming the core area to be analysed and reviewed in order to increase effectiveness.

In this study, process improvement term will be analysed as well as the process term by starting to review what a process is as a term. Later on, defining the processes, aspects of the processes, how to define the problems, documentation of the processes and the reasons for improving processes will be argued as well as the risks of not improving a process. A case example will be worked on by Bosch Turkey's call centre optimization project. Later on, findings will be reviewed with concentration on the success of the project and the areas to be improved.

In the project, the interface of the call centre processes is aimed to be simplified. As being one of the biggest projects of the company right now, 227.000 lines decreased to 80.000 for communication with the customers in order to solve their problems. Main purpose of the project has been satisfying the customer, call centre, sales and the technical team by decreasing the time and cost and assigning the right job to right person. Questions that are asked to the customers have been simplified by deleting or shortening some. Solving the problems of the customers as much as without assigning a technical team is the key of the project by understanding the problem right and solving it on the phone as much as possible. If the problem cannot be solved on the phone, understanding the problem correctly and assigning the right team with the right time expectation is important. Details of the project will be deeply analysed.

Next chapter introduces the concept of process improvement, why it is important and how process improvement is done. Chapter three presents the key responsibilities of project

management, how to start the process management, success factors and process improvement methodologies. Chapter gives the industrial example of a process improvement process with details of how it is done and what was improved.



2. LITERATURE REVIEW

2.1 BACKGROUND

“A process is any orchestrated sequence of activities and associated tasks required to meet goals or objectives. Inputs to the process become outputs. Every ITS area uses numerous processes every day whether that area is business, managerial, administrative, human resources, financial, operational, technical, or any other.” (Stevens, p. 3). Information and technology services have become very crucial with the improvements of technology. They have started to be used in all the functions of a company. They symbolize all the departments of the company as well as all the works getting done and linking them.

“A work process is a set of related activities that adds value and provides a service to a customer.” (Li, 2001). The main focus of the process is to be integrative, cross functional and customer oriented. It needs to be integrative because single process needs to cooperate with each other in order to fulfil the needs of the company and achieve the ultimate goal. It needs to be cross functional because of the same problem as explained, it needs to work together with different functions and departments. Finally, it needs to be customer oriented since the main focus of a company is to satisfy the customers so that they can continue to use the product so that company may continue to make money.

Processes are designed to meet the goal defined in the system. In order to reach to that goal, there is a workflow working behind and yet process has many divisions connecting to each other in a flow. In this flow, most of the tasks are linked to each other automatically when some of them needs to be entered manually. Processes may be created to be used for all the company, just by one section or a few sections that work together. Even though the user may alter the steps, sequence of the process cannot be changed. Processes can be used both by internally and externally to provide services and also they have touchpoints that one result of a process touches the following series of that process. (Stevens, p. 3)

Process term should be separated from the procedure term. It should not be initiated with being a tool, lifecycle standard or flowchart but the answers to the questions of what, how and who to maintain a more effective organization. It is the operational definition of the main parts of a process in the means of design, behaviour and requirements. Skilled people, reasonable and effective resources are needed for better outputs and yet it should be tailored according to the needs of the customers and the companies (Bandor, p. 6-8).

2.2 WHAT IS PROCESS IMPROVEMENT?

Process improvement term is first introduced to the world by H. James Harrington in 1991 by his book, Business Process Improvement. Harrington is an expert working for IBM and writes the book in order to perfect the organization's system, process and products. His work bases on analysing every company to be based on two main figures: people and processes. Starting from that point, he focuses on the process side and defends that the improvements in the company are based on the improvements of the process. He says that measurement of the processes is very important in order to see the effects in the changes (Kokolis, p. 1).

According to Li, process improvement is done over four stages as description, analysis, design and implementation. All these steps are done in the focus of the defined goals such as customer satisfaction, cost reduction, self-fulfilment etc. Description step consists of defining the customers, activities (primary: value adding and supporting: non-value adding), workflow, policies of the company and the constraints that exist in the process and finally the output of the processes. Analysis step is done by firstly identifying the areas to be improved as using the internal and external information sources and the problems. Later on, in the improvement areas, there should be an order and prioritization since not all the areas can be worked on at the same time. As an output of this step, problems and targets can be identified. In the design section, new process should be designed considering the customer requirements and the design parameters and yet create the best design considering them.

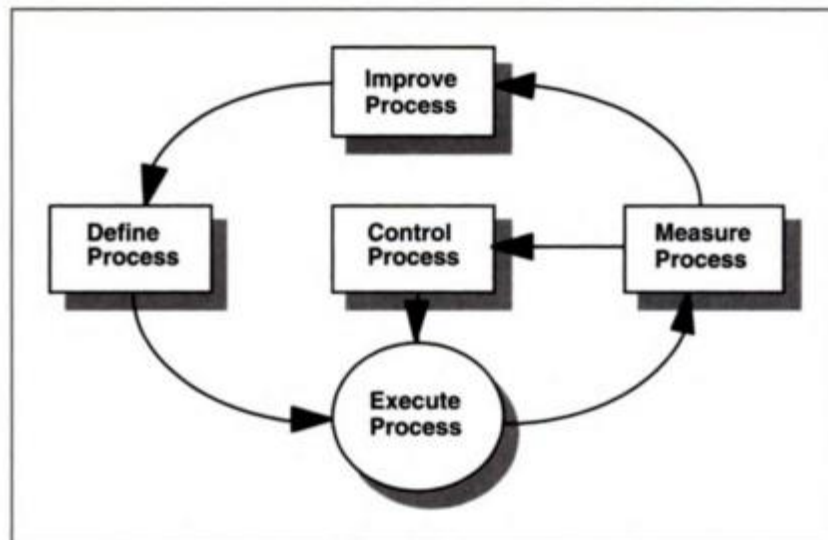
Software process management is managing the processes related to developing, maintaining and supporting software products. It is managed and improved in the same viewpoint as the general process improvement. However, since the process is designed as in a software flow, it is improved in the same way by following the four main steps as defining, executing, measuring and improving the process. The process management is done in the leadership of the project manager with these four steps (Carleton and Florac, p. 5-6).

Software process management in big companies is a big issue as well. It is important to understand what process improvement is in order to start creating process improvement in a company. Executing a process improvement project, as in the example of BSH; an example in this project, can only be done by firstly understanding the basics of process improvement. Later on, execution, measuring and improvement steps can be maintained.

3. KEY RESPONSIBILITIES OF PROCESS MANAGEMENT

Easiest way to start process improvement is by defining the process and following the four process improvement key responsibilities. The cycle is circular and continues with executing the defined process, measuring the executions, controlling it, executing it again if needed and improving it according to the measurements. After improving it, defining process starts again for an overall management.

Figure 2.1: Key Responsibilities of Process Management



Reference: Carleton and Florac, p. 6

3.1 DEFINING THE PROCESS

In order to improve a process, a structured environment is required for seeing the problems easier and yet increasing the control over them. In order to implement the process, the steps in the process needs to be defined clearly. It also makes the process goals easier to be communicated and transferred to the team (Carleton and Florac, p. 6). Inputs, outputs, customers and the suppliers of the process needs to be defined. Understanding the customer's need and maintaining the connection between the need

and the supplier is essential. In order to define the process, there needs to be a backward work done starting from the need of the customer as outcome to fill in the steps until the suppliers, income (Nickols, p. 6).

We tend to think in the frame of what we know. In order to solve the problems, the same framework of thinking is not enough and yet there needs to be a different point of view. People general have ideas of the work within the scheme of the work they do. They do not know how the work they do contributes to the other sections. Since they do not know it, general process scheme is not understood well and so it is not optimized easily. It makes the identification of the processes hard and so the optimization. Process boundaries must be set as being the parts of the big system rather than the small systems being related. Establishing the boundaries and deciding which ones will be used would help to define the processes (Nickols, p.10).

3.2 EXECUTING THE PROCESS

After the goals are set according the defined process, it is executed according to the observation of the project manager by the software developer or the maintainer in the software development projects. It should be following the design and should be following the rules and the measurable goals. It should be controllable, able to keep up with the design and support the access. Data items must be defined and the data collection should be integrated into the process so that data can be collected easily to measure the process. Analysis should be done real time and feedback should be gathered fast. Data management is essential in this step and data about the effort, time, changes, process definition, product characteristics should be gathered (Basili, p. 36-37).

3.3 MEASURING THE PROCESS

Process can be measured by analysing the collected data in the previous step. Project characteristics that effect the choice of process and the phases that create the biggest errors can be obtained by this step. Data can be evaluated and analysed in how to control the errors and problems and what can be the causes of the errors. Predictions and controls can be done for the expected costs and the reliability of the process. Motivations and improvements can be done as a result (Basili, p. 38). When the process is taken under control, measurements, management oversight, benchmarking and assessments should be done continuously.

Requirements in the system may increase continuously to be more robust, reliable for the market competition in the ever changing environment. Fast responses, trainings, schedules, funding and reliability is needed as well as the sustainability and in order to maintain these, improvement is needed. Proper measurement is the main way to understand the problems to start the improvement. Capabilities can be understood as well as detecting the trends, needs, problems and cost can be controlled as well as decreasing the risks, increasing the quality thanks to measurement. What should be measured, how it can be measured and what the results of the measurements mean is important to understand the signals for the problems (Carleton and Florac, p. 10-11).

Measuring the process can only be done by creating the goals since the ultimate purpose is to meet the goals. Project management, process management and the product engineering are the main ways to set these goals. Project management is important for setting the goals for cost, schedule, quality and function and the project management creates plans and checks the status according to the plans. Process management tracks the processes to meet the goals and product engineering supports the process for creating satisfaction from the product. Technical issues like reliability, productivity, stability, performance etc. is the concern of product engineering (Carleton and Florac, p.11).

3.4 IMPROVING THE PROCESS

Process may be taken under control but it still may not be able to fulfil the customer needs. It is not enough for a process to work properly but it also needs to be adaptable, competitive and fast for to produce the outcomes and be consistent. Resources should also be compatible to maintain the needs of the process. In order to fulfil these needs, existing process should be analysed and understood in detail as well as the factors that affect the process, actions should be planned and implemented to change the process according to the needs and as a final step, results should be reviewed to examine the impacts and benefits, as well as analysing if it will be cost effective (Carleton and Florac, p. 8).

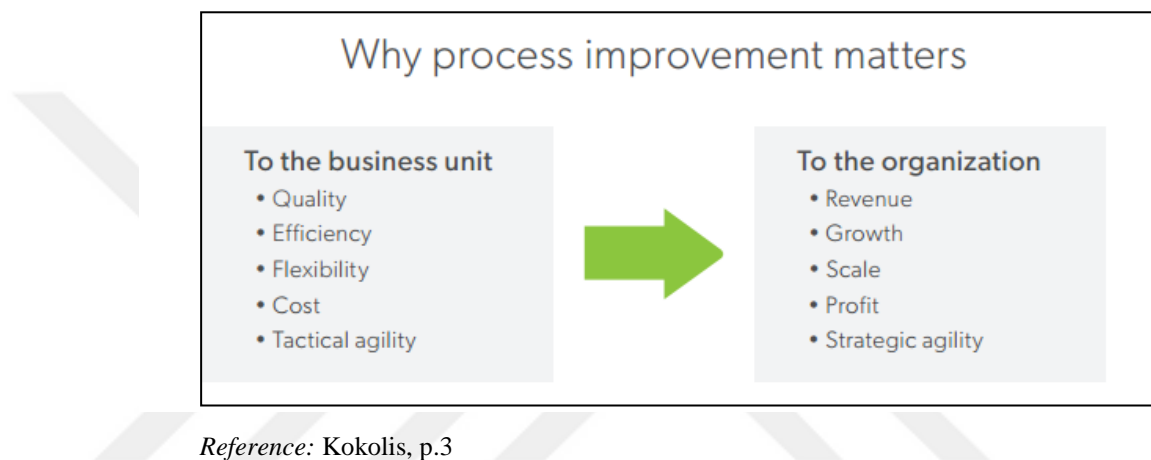
Companies tend to solve their problems and it is considered almost impossible to solve them sometimes. Because, in order to make changes in the bottom line, they also focus on the solution in the bottom line. However, considering the problems in smaller scales and making improvements in the parts of the small processes is the key for efficiency. Process improvement to the existing workflow is the best way to reach overall results in the shortest time (Kokolis, p.1).

Process improvement is needed when the process is not enough for maintaining the goals of the company, when there are not enough people in charge to keep the process going and when there are not many ways tried to do the process but only one have been tried for a long time. It has the benefits of showing the needs in various areas, improving communication within and outside of the company, creating plans, learning lessons, creating analysis for bigger projects and helps to asses for training and skills (Bandor, p. 11).

Process improvement refers to making the overall more effective and efficient by improving sections of the process. Processes start to be degraded and even useless over time since the overall technology or parts of the processes change as well as the workflow in the company and yet the processes need to be reviewed and improved. According to Stevens, process improvement mainly helps the company in the following ways (p.3):

- a. Reviewing the process not in the eyes of the company but in the eyes of the customer which is the core of process improvement
- b. Defining, managing and measuring the process according to data and evaluating it according to the data-based rules developed
- c. Breaking the parts of the processes and understand deeply how the parts interact and effect each other
- d. Reducing unwanted and unnecessary cost and time

Figure 3.1: Why Process Improvement Matters



Kokolis (p. 2) argues that the very fundamental aim of the process improvement is to make big improvements in the performance of a company. The purpose is not to make small changes but to make revolutionary changes. Since the company is made of processes, a change in a process is expected to make a tremendous change overall and yet process improvement is the only way to make revolutionary changes in a company.

Process improvement is a topic of organizational development which starts with identifying the problem by analysis and improving the areas needed which are compatible with the goals and objectives of the company like reducing the cost and time. A suitable methodology and strategy needs to be chosen according to the needs of the company. Process improvement should firstly start with identifying company's goals and customers so that the processes can be analysed and improved accordingly.

Process improvement mainly focuses on time, money, resource, material and opportunity optimization. Not improving the processes constantly would bring problem on all these areas since these elements would not be reviewed and worked on. In order to complete the work less complicated, more effectively in time, money and workforce base, process needs to be reviewed and improved. Therefore, in order to fulfil the needs of a company and improve the value delivered, improving the process is crucial.

3.5 HOW TO START TO PROCESS IMPROVEMENT?

Most important problem to start the process improvement process is the leadership of the senior managers and prioritizing the process improvement as a project. It should be commended from the top to bottom so that it can be started and yet go on continuously. Leaders should make sure all the workers are trained for the improvement and also that all the workers are on the same page of the mentality. The focus should not be to persuade the employees for process improvement but a long term improvement mentality (Drain, p. 3).

A support team that will advise the process improvement strategy and project is needed to start the project. Advisory team is supposed to be made from employees from different sections of the company. Brainstorming for improvement can only be done effectively by people with different viewpoints as well as different ideas and specialization areas. A Checkpoint Review Team can also be useful to make decisions for important points. Also, a change management framework would be very useful for starting and maintaining the process. Having a solid plan to make sure all the employees want to contribute to the change is essential. They should be willing to contribute so they should be educated and also they should be hearing about the improvements in the projects so that they can feel involved. Nevertheless, facilitation skills, strong work relationships, effective communication, influencing others and team leadership is needed to start the improvement process (Abudi, p. 2).

Carleton and Florac (p. 9-10) indicates that processes are designed to create results and adjustments and improvements should be done in a way to fulfil the internal and

external needs. They review the first steps to process improvement as measuring the performance, stability, compliance, capability and improvement:

- a. Performance:** Process' performance should be should be effective for time, quality, quantity and time as well as satisfying the needs of the business and the customer. Performance should be measured and the results should be predicted.
- b. Stability:** In order to measure the process performance, it should be stable so that the future results can be predicted. Process behaviour charts can be used in order to measure the stability. If it is not stable, it should be stabilized first before further actions.
- c. Compliance:** It should be analysed if the process is properly supported, faithfully executed and the organization is capable enough to execute the process. However, these are not enough to maintain satisfactory performance, the measurements of the process should also fall between the required ranges when it is examined for the operations and the variations.
- d. Capability:** The process should be capable enough to meet the needs, consistently. It is important to be responsive to the changing environment in the market and increasing demand as well as the need for increasing quality and the need for further technological developments. Without understand the process' capability, it is not possible to improve it. Improvements can only be designed according to what the system is capable of at most.
- e. Improvement:** According to the measurements in the performance, goals can be set for improvement. Decreasing or reducing the variability, increasing the performance, creating more profitability and measuring the impacts of the changes can only be maintained by improvements.

3.6 SUCCESS FACTORS FOR PROCESS IMPROVEMENT

Process improvement requires hard work and time in order to both to be started and to be continued to create sufficient results. There are certain factors such as creating goals, convincing the staff, maintaining understanding of the goals within workers, encouraging communication and creating relevant objectives (Mellis and Stelzer, p. 16).

Main headlines to be discussed below for successful process improvement (Mellis and Stelzer, p. 15-24):

- i. Management Commitment and Support:** Management should be willing to support the change in time, money and effort in order to be feasible. It is hard for the staff to leave the old habits and support the change and management needs to encourage staff for that. In order to do that, they should be motivated for the change at first. Nevertheless, senior management should be aware of the change and investment needed for improvement so that they will be supportive for the future needs.
- ii. Staff Involvement:** Staff involvement is essential since the innovation steps should be maintained in everyday activities and on daily basis. Process improvement requires the help of different sections and departments in the company; not the management or project management level. Since many people is needed involvement for the improvement, whole company should be in line with the change decisions. Best way to do it is to have local process teams, trainings, forums etc. where the workers can be educated and also share ideas about the change.
- iii. Providing Enhanced Understanding:** Process improvement relates with many other activities in the company such as marketing, sales, IT, finance. Therefore, in order to maintain the process improvement, all business functions should be understood deeply to create improvement. Documenting the processes, having regular audits and improvement meetings would help to increase this understanding. Enhanced understanding would not only help to create a better

improvement process but also would motivate the staff since they would have a better overall understanding of the company and the processes.

- iv. **Tailoring Improvement Initiatives:** Improvement plans should be tailored and adapted to different departments. Different departments and teams have different needs so the plan needs to be revised according to the needs, strengths and weaknesses.
- v. **Managing the Improvement Project:** Improvement plan must be created effectively with the milestones, objectives and schedule. Responsibilities should be clearly defined and the process should be monitored.
- vi. **Change Agents and Opinion Leaders:** Change agents support the improvement projects in the corporate level. They initiate, guide and motivate the teams. They are respected members in the company and help for the tailoring activities as well as overcoming the resistance for change.
- vii. **Stabilizing Changed Process:** It means the continuous support for improvement in local level. In order for the change to be continuous and for the situation not to go back to how it was before, stabilization is necessary.
- viii. **Encouraging Communication and Collaboration:** Departments and teams need to be working together while the improvement process. Meanwhile, they need to be communicating well and collaboration for the change project. Meetings and groups help to have feedback mechanism and stronger collaboration.
- ix. **Setting Relevant and Realistic Objectives:** It is important to set achievable goals for improvement projects with a given timeline. The goals should not be exaggerated and short term goals should be set in order to achieve the long term goals. Improvement goals should also be relevant to the top management business goals.
- x. **Unfreezing the Organization:** The inner resistance to change for improvement should be overcome and there is an additional force required to do that.

3.7 BUSINESS PROCESS IMPROVEMENT METHODOLOGIES

In order for the companies to solve their problems and maintain a better working flow of works. In order to maintain these, several methodologies have been designed in the last thirty years for different purposes and organizations. These strategies for this purpose are such as Six Sigma, Lean Management, Lean Six Sigma, Agile Management, Re-engineering, Customer Experience Management, BPR, Total Quality management, Just-in-Time, Kaizen, Hoshin Planning, Poka-Yoka, Design of Experiments, Kaizen and Process Excellence etc. (Gershon, p. 61). In this project, Lean, Six Sigma, Total Quality Management and CEM will be analysed in details as examples of the main methodologies.

It is also very common for many companies to fail in the process improvement plans, especially the ones which are IT related. In order to be successful, there are some important notions that a company should be careful about. These main notions are summarized below (Wiegers, p. 1-8):

- i. Lack of Management Commitment:** Process management requires sacrifices from both the individuals and the top management. For the top management, it is not important to support the plans but they also should be willing to make sacrifices especially for the short term to create the resources for long term plans. Management should have a common vision in order to create that environment.
- ii. Unrealistic Management Expectations:** Managers may be too enthusiastic about the changes that they may set the goals too high and have too much of expectations. If the goals are not set up properly, even the successful projects may seem like a failure. In order to solve this problem, managers should be educated well for the realities for the costs and benefits.
- iii. Time-Stingy Project Leaders:** Project leaders are supposed to adjust themselves and their schedule to the project schedule and they should devote time to it. In order to avoid the opposite situation, it should be made sure that all stages of management have the same commitment to the project.

- iv. **Stalling on Action Plan Improvement:** If the action plans are not prioritized by the team, the finish date of the project cannot be achieved as set. In order to avoid that, action plans should be taken very seriously and be treated as small projects themselves.
- v. **Inadequate Training is Provided:** Process improvement is a very risky project and yet developers, managers and the process leaders should have the proper education and skills. If not, it becomes very hard to finish the project. Training is essential to solve this problem and yet relevant training to different teams.
- vi. **Failing to Scale Formal Processes to Project Size:** It is important for the companies not to make the processes of the project over complicated. It is best to define the steps as simple as possible.

3.7.1 Lean

Lean methodology has its roots from Toyota Production Systems. Its main focus is to shorten the time between order and the shipment of the product. The way to achieve this goal is done by deleting unnecessary steps from the production or service phase. It helps both to reduce the cost and also save time since the cycle time is shortened. Lean building blocks which are the tools and techniques used for implementing lean are defined by the following terms, even though it may vary from company to company sometimes (Pojasek, p. 2):

- a. **Five S** brings order, organization and tidiness to the operations.
- b. **Visual Controls** helps to visualize all the activities.
- c. **Poka Yoke** eliminates mistakes.
- d. **Cellular Design** is referred to the tools and parts being stored in a way to help operational steps.
- e. **Quick Changeover** is the ability to change the tools fast so that different products in small amounts can be produced in the same equipment.
- f. **Pull Scheduling** is the term for scheduling the production according to the needs of the customers; no production is done unless there is a demand received.

- g. **Kaizen** is the term refers to making small adjustments in the parts of the processes so that an overall improvement can be achieved.

Lean is based on five main principles as follows (Radnor, p. 19):

- 1- Identify who the customer is and what they require, the value they want
- 2- Identify the value flow for every product that has a value the customer requires
- 3- Make sure the flow is continuous and standardize the steps
- 4- Fix the problems where the flow is not continuous in a way to start from the customer demand and match it with the inventory and human
- 5- Delete all the activities which do not add value and remove them from the process steps.

3.7.2 Cem

Customer Experience Management (CEM) is the process improvement methodology that helps to retain the existing customers. In order to retain the customers, they need to be understood and classified according to their needs so that special solutions can be created for each. To understand customers, insights should be gathered from them for their needs and preferences both for the products and services and the way they want to interact with the company. CEM helps to maintain the behaviour that is best to certain customer groups by the company. Its main focus is to increase the loyalty and decrease the churn and make these customers recommend the company and products (KPMG, p. 2).

Customer Experience Management has become so big of a problem that eighty-nine percent of the customers who change their companies to a competitor is due to poor CEM. Technological developments have made the usage of technology more important in the competitive world. How the customers interact with the brands have been so important that especially the response time and the speed to answer customer complaints and needs have become the essential issue to work on (Nelsen, 2015).

Customer experience management is a long process and involves many different sections in the company from advertisement to post-purchase support. All the

interactions throughout and even after the purchase process should be carefully reviewed and transform the steps needed. In order to maintain a better customer experience management, KPMG (p. 7- 10) advises seven steps:

- 1- Understand the needs of the customers and how the key customers set the priorities
- 2- Do economical analysis in order to understand the impact of the sales and marketing operations in order to balance the profit and spending from these operations
- 3- Analyse the customer data deeply to see the patterns and adapt to the changes fast.
- 4- Care about lead generation and observe customers' activities for leads.
- 5- Create a customer centric information architecture to understand the type of customer as houses, workers etc. to create links accordingly.
- 6- Create a workflow tool that is connected to marketing, sales and other operations so the tasks can collaborate with each other between departments.
- 7- Draw a CEM map in company's lifecycle so that the problems can be seen and solved easier.

3.7.3 Six Sigma

Six Sigma concept was first introduced to the literature by Bill Smith who was an engineer in Motorola in 1986. It is created to find solutions to increasing number of warranty claims. Later on, Mikel Harry develops the concept deeply in 1980s. Motorola and GE has been the two companies who had the most contribution to the Six Sigma concept (Radnor, p. 29).

Ferguson (2007) explains the differences between Lean and Six Sigma such as lean being a philosophy and Six Sigma being a programme. Also, Six Sigma is specific departments oriented and does not try to solve the problem in the big picture when Lean includes all departments to a department specific problem. Six Sigma is cost and quality

centric when lean is more business strategy centric and tries to achieve an overall improvement.

Six Sigma is done by decreasing the variation in order to solve the problems by statistics in a way to create outcomes and projections for future from past data. It focuses on process improvement to decrease the variations in the process by finding the causes and defects. Causes are found in a five steps process called DMAIC; define, measure, analyse, improve and control. After the causes are found, solutions are designed and implemented in a way to create measurable outcomes (Pojasek, p. 4-5).

Six Sigma is seen as the most effective method and being used by all of the Fortune 500 companies. It has been being used in manufacturing, service and transactional industries. Six Sigma's main purpose is to achieve an error free environment to maintain maximum customer satisfaction, increased loyalty, profitability and employer satisfaction as well as the retention for the workers and increased market share. In Six Sigma, quality improvement is the key challenge and so the identification, analyzation and measurement of the process inputs to achieve the maximized quality. Achievement of the improvement goals is done by process capability measurement (Gershon, p. 65).

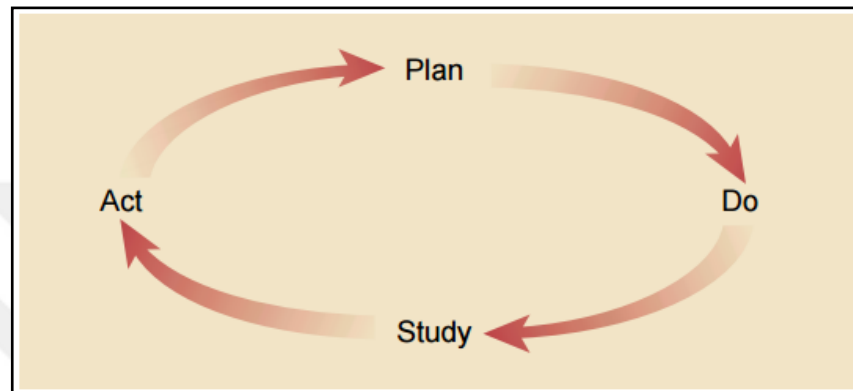
3.7.4 Tqm

Total Quality Management (TQM) is a process improvement technique that focuses on quality in operations. It is seen as a revolutionary methodology and has been found very successful. It is seen as the root of the Six Sigma and the other main process improvement strategies. It evolves around four main areas such as managerial responsibility, work process focus, measuring performance by data and statistics and employee involvement (Gershon, p. 62-63).

Total Quality Management's philosophy is based on some rules such as customer focus and find the customer needs, continuous improvement, employee empowerment to make all of them work on quality management, use of quality tools, designing products for the customer needs, process management and supplier quality. In order to achieve these goals and maintain these steps, The Plan- Do- Study- Act (PDSA) Cycle is

worked on. In this cycle, plan is creating a plan to identify the problems and also to solve it, do is doing the plan, study is studying the data collected as the results of the do process and act is act according to the studied data from the results of the plan and implementing a new procedure if needed (Reid and Sanders, p. 148).

Figure 3.2: PDSA Cycle



Reference: Reid and Sanders, p. 148

TQM focuses on continuous improvement. It can be applied to every section of the company but focuses on human resources and quantitative methods to the improvement of production and service. It cooperates with the management strategies, existing improvement projects and technical processes. It is both related to the management quality and the quality of the management and yet the quality of the products and the services. Nevertheless, it involves and explains the culture needs to be set in the company for achieving the quality goals. It is related to everyone and every section in the organization and yet is a long term plan. Customer orientation is essential, it needs to be flexible and yet responsive to the changes (Mansir& Schacht, p. 3).

4. DATA AND METHODOLOGY on INDUSTRIAL APPLICATION: AN EXAMPLE OVER THE COMPANY BSH

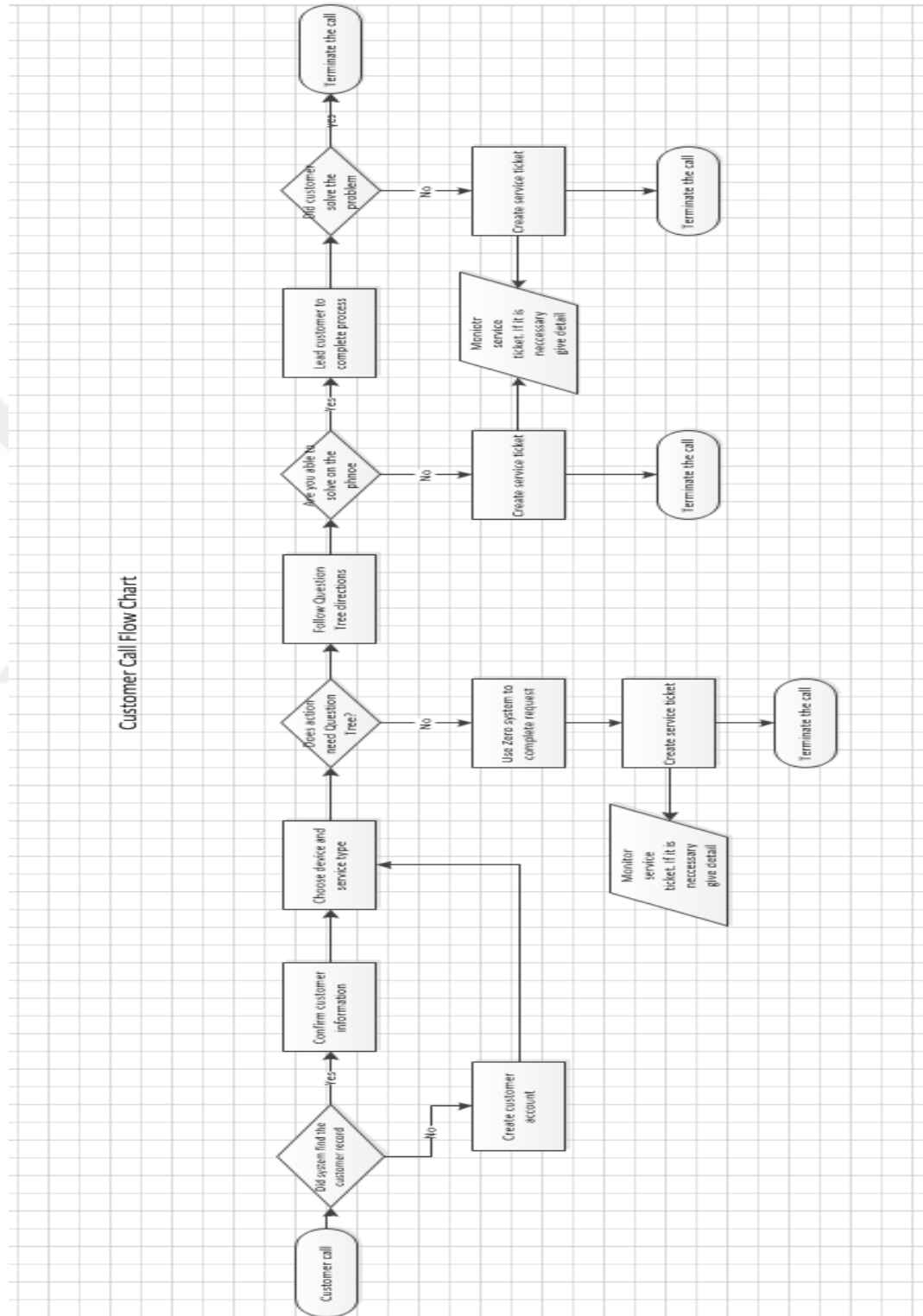
In this project, an IT interface optimization improvement process is taken as an example to be analysed for the company BSH.

4.1 COMPANY BACKGROUND

BSH is a company which is the third biggest company worldwide in home appliances class. It has 13 different brands and have 43 different factories all over the world. The biggest manufacturing complex in the world is the one in Turkey, Cerkezkoy. Company has sales of 11,4 billion euros according to 2014 data and is the leader in market of home appliances in Europe. In Turkey, it has four brands: Bosch, Siemens, Gaggenau and the local brand Profilo. It has thirty-one percent market share in Turkey and yet is one of the leaders of white appliances sector in the country. Company also has 1300 innovation experts in 25 different points and a leader in innovation worldwide. (bsh.group.com.tr)

Productivity, know-how, flexibility and speed are the main initiatives that brings success to the company. It has high collaboration between suppliers, manufacturing and sales and yet successful in managing the supply chain. It is strong in purchasing and logistics with many vendors in countrywide. It does innovations continuously for warehouse management, distribution network and optimizes the costs. It has the reward of Europe's Best Logistics Performance. (bsh.group.com.tr)

Figure 4.1: Customer Call Flow Chart



4.2 PROJECT

4.2.1 Current Situation

Company BSH has created an optimization project for all the four brands they have in their interfaces which connect the customer, call centre, field and the factory. The interfaces (Master Data, MD) used to be managed by the Global IT team in Germany and all the changes were done by the global team according to the requests of the local team. However, there has been a change in Master Data screens so that the system could be updated instantly as well as interfering to the question flow whenever needed. By this change, this project became possible and manageable.

Since the old Master Data screen was not user friendly, it would take around 10 days of training for a person to have the authorization to the MD. In the new MD, it only takes a day of training to start using the system.

Tickets are created from the screens according to the product groups, such as white appliances, small home appliances service type such as maintenance, montage, exploration, removing the doors etc. On the tickets, there are certain diagnose codes assigned as well as technician and material offers. Since the diagnose codes are universal for all brands, they should be assigned carefully and accurately. Thanks to Master Data, diagnose codes is now able to be confirmed if they are right or wrong. Ticket accuracy effects the factory as well since the factory is supposed to pay for some of the tickets according to the implications written on. If the implications are wrong, factory would have to pay unnecessary amount which would end up with the factory objecting to the amounts, increasing the workload and the paperwork.

Ticket screen can be seen below in order to have a better understanding of the interface

Figure 4.2: Ticket

The screenshot displays a complex form for managing service tickets. The form is organized into several sections:

- Header Section:** Includes fields for Servis Kodu (2222), Fiş No (52061730), Set No, Teknisyen (000000 - İsimsiz Teknisyen), İcmal No (7956401), and Açık Bekleme Nedeni.
- Status and Tracking:** Fiş Durumu (Açık), eCom Fiş Durumu (Yeni), Yardımcı Teknisyen, and Takip Tarihi (00:00) with a Talimatlı button.
- Product Information:** Tüketici Cihazları (Gaggenau-Aspiratör), Marka (Gaggenau), Ürün Grubu (Aspiratör), Ürün Kodu, ÜT, Seri No, and Ankastré.
- Service Details:** Başvuru Tar./Saat (18/04/2016 13:51), Hizmet Düzeyi (Normal), Başvuru Notu (Müşteri servis günü ve saati ile ilgili aranacaktır\\Tavsiye), and Ürün Tipi.
- Operational Data:** Satın Alma Tar., Montaj Tarihi, Prj. Cihazı, Proje, Ürün Kalitesi (A), Tarihçe, Onarım Tarihi (18/04/2016), Başlangıç, Bitiş Süresi, and Randevu (00:00).
- Notes and Actions:** Teknisyen Notu, Diğer Notlar, Atölyede İşlem, and Atölye buttons.
- Footer Section:** Kod Bilgileri, Fatura oluşturuldu, E-Mail, 3 FAZ, HMK (00983333), Onarım Kodu (U01), Arıza Kodu (500), Başvuru/Şikayet Nedeni (Modifikasyon (Der)), and Referans No.

Accuracy of the tickets are also important for the technician; the field team. On the tickets created for the technicians, there are some notes for the type of the product, type of the service, request and the service price if it was told to the customer. These information is very important to be one hundred percent accurate for the technician to complete his job without repetition. Accuracy of the information is controlled by Master Data screens. If there is a problem about the accuracy of the information, dissatisfaction of the technical field team since they would not be able to complete the task at the first try. Nevertheless, customer satisfaction is decreased as their problem would not be solved quickly.

Screens in the IT process effects the customer, call centre, fields and the factory. Having many lines of processes and questions bring many questions. It is costly to ask many

questions to the customers since it increases the call time, decreases the motivations of the call centre agents since it is hard for them to manage the process with too many questions and yet they cannot achieve their targets. It also decreases the customer satisfaction since they receive too many questions and the complex structure creates many problems and misunderstandings and brings extra work to the field team as they may get wrong definitions from the call centre which again makes it hard for them to achieve their field targets. Overall, old version of the process was not feasible for the customer satisfaction, call centre agent and field team worker motivation. Nevertheless, since all the processes are controlled by the main team in Germany, unachieved targets would raise questions from them with detailed explanations and even audit teams were sent to Turkey in the problematic cases.

When the customer calls, the first action taken from the call centre agent is the “do it yourself” method which aims to solve some of the problems over phone. (For instance, if the cooler alarm is on constantly, problem would be solved if the alarm button is pressed for 8 seconds.) It is a very good solution to decrease the unnecessary cost but increase the call time of agents which decreases their sales and the money they get. However, this section is so important for the company is that “do it yourself” reports are sent to Germany for detailed analysis and the results provide a ranking of the countries. In this case, it is hard to satisfy the call centre agents and also increase the success of the company. This dilemma is tried to be solved in the improvement project as well.

Another problem about the customer interaction is about defining the technical problems. It is important to ask the right, reasonable, detailed and optimized questions to the customer in order to understand the reason for the technical problems. It is also important to define the problem right since the problem definition screen connects to the material requirement screen which is connected to the technicians’ screen to go to the customers’ houses with relevant materials. Systems are not only integrated for the materials but also for the availability of the technicians. While setting an appointment to the customer, availability of the technician is considered by the system with the logic of 1-Technicians

can only receive certain amount of works since they have a capability limit. 2-Technicians are supposed to finish their work at a certain amount of time. Logic that is working behind assigning jobs to technicians is that system compares the assigned time to a technician with the number of works assigned to the technician. If the technician is done with the working hours, system assigns no more jobs. On the contrary, when the number of jobs assigned to a technician is not enough to fulfil his working time, system keeps assigning new jobs.

In the project, BPI and BRI methodology has been used and as a results, number of lines 227.000 have been decreased to 80.000 in the process. In order to decrease the number of lines in the total process of call centre, financial analysis have been conducted to decide if some questions asked to the customers should be omitted or not.

Before the optimization, there has been 91 question groups existed with the following numbers in groups with 74 of them being re-entered to the system:

Table 4.1: Service Type and Number of Question Groups

Service Type	Number of Question Groups
Disassembly	14
Gas Change	2
Door Placement	1
Door Direction Change	2
Exploration	12
Montage	18
Repair	22
Demonstration	20

4.2.2 Improvement

As a result of the optimization project following actions are taken:

- In the old MD, linked questions or availability would take a while to be updated and yet the updates would be done one by one and IT would have to work on the process to finalize the changes. Meanwhile while IT was working, technicians would get the wrong data since the tickets would not be right before IT's work is done (which takes a while). In the new MD, IT's work is not needed since the question and answers would not be introduced to the system in different tables but in groups.
- There is no more IT help needed to update the system. "Add answer" button is added to the interface to introduce new answers and "answer order" button is added to change the order of the answers.
- In the old MD, there were tables. In the scenario, there were different tables for different questions, answers and the texts which relate the answers to the other screens. In the new MD, all the questions and answers can be seen as an item in one group and the linked texts can be seen easily with the answers.

Table 4.2: Old MD Main Screen

Question_Items	Edit	Flow_Chart	CaseId	Description	EngDescription	IsSubCase	Active	Version	TypeId	CaseTypeId	HtmlContentId	ChangeSetId	ReferencePKId	Previous
Question Items	Edit	Flow Chart	2	İlk Aramada Müşteri Kontrol	Customer Control in the Beginning of Call	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	3	Marka Doğrulama	Brand Confirmation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	8	Müşterinin Tüm İşlemleri	Customers All Cases	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	9	Montaj	Installation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	10	Müşteri Doğrulama	Customer Confirmation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	11	Genel Çağrı Sonlandırma	General Call Finalization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	13	TR-Teknisyen Öneri	TR-Technician Suggestion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	15	Onarım	Repair	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	18	Sonuç Bilgilendirme	Result Info	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	24	Accessory Sales	Accessory Sales	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	25	Ürün-Model Sorgulama	Appliance Model Query	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	26	Müşterinin Tüm İşlemleri-CTI	Customers All Cases-CTI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	27	Aksesuar Sipariş	Accessory Request-With SparePart Code	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	28	Servis Kayıdı Alma	Add Ris	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	29	Soru Ağacı	Soru Ağacı	<input type="checkbox"/>	<input checked="" type="checkbox"/>			3	1			
Question Items	Edit	Flow Chart	31	Teknisyen Öneri	Technician Proposal	<input type="checkbox"/>	<input checked="" type="checkbox"/>				1			
Question Items	Edit	Flow Chart	32	ESRA_test	ESRA_test	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	35	Bayi Adres Sorgulama	Dealer Address Query	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	36	Servis Adres Sorgulama	Service Address Query	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			
Question Items	Edit	Flow Chart	37	Çoklu kayıt	Çoklu kayıt	<input type="checkbox"/>	<input checked="" type="checkbox"/>			1	1			

Table 4.3: Question Table in Old MD

Question Messages											
Edit	CaseQuestionMessageId	CaseQuestionId	CaseQuestionMessageTypeId	Description	EngDescription	MediaPath	OrderNumber	IsVisible	DefaultMessage	VersionTypeId	
Edit	7997	2001	3	* Saat aralığı vermeden kaydı ertesi güne alınız.	* Saat aralığı vermeden kaydı ertesi güne alınız.		0	<input type="checkbox"/>	<input type="checkbox"/>	2	
Edit	7998	2001	3	* Servis kaydına basıp,nota bilgi giriniz.	* Servis kaydına basıp,nota bilgi giriniz.		1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	
Edit	5709	2001	3	* Servis kaydına basıp,nota bilgi giriniz.	* Servis kaydına basıp,nota bilgi giriniz.		1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	
Edit	6315	2001	3	* Saat aralığı vermeden kaydı ertesi güne alınız.	* Saat aralığı vermeden kaydı ertesi güne alınız.		1	<input type="checkbox"/>	<input type="checkbox"/>	1	
Edit	9423	2001	3	* Servis kaydına basıp,nota bilgi giriniz.	* Servis kaydına basıp,nota bilgi giriniz.		1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2	

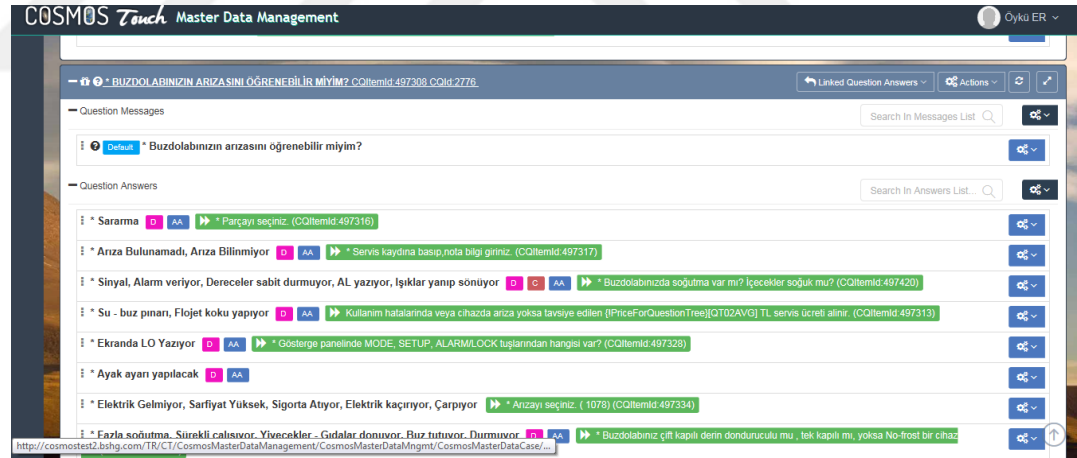
Table 4.4: Answer Table in Every Question in Old MD

Question Answers											
Edit	EngDescription	CaseQuestionAnswerId	CaseQuestionId	CaseAnswerId	AllowTextEntrance	AnswerOrder	Active	ConditionSQL	VersionTypeId	Value	ChangeSetId
Edit	* Order Entry	41037	2001	2128	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		11
Edit	* Customer will inform	41038	2001	2136	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		11
Edit	* Order Entry	43331	2001	2128	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		38
Edit	* Customer will inform	43332	2001	2136	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		38
Edit	* Order Entry	45222	2001	2128	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		82
Edit	* Customer will inform	45223	2001	2136	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		82
Edit	* Customer does not know, order entry will be created	45224	2001	3148	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		82
Edit	* Customer does not know.	46180	2001	3148	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>		2		150

Table 4.5: Text Table Related to Answers in Old MD

Question Availabilities								
LinkedItem	Edit	EngDescription	CaseQuestionAvailabilityId	CaseId	CaseQuestionItemid	CaseQuestionAnswerId	AnswerValue	LinkedCaseQuestionItemid
Question	Edit	* Order Entry	462654	392	497317	36838		497313
Question	Edit	* Customer will inform	462655	392	497317	43332		497310
Question	Edit	* Customer will inform	498458	392	497317	43332		497310
Question	Edit	* Customer will inform	498487	392	497317	36839		497310

Figure 4.3: New MD (D: Diagnose Code, A: Apply note, C: Urgency, green items: texts)



- d. IT was needed to create Apptytone, Diagnose Code (a universal code, same diagnose code is used for the same failures everywhere) and the Urgency (according to the urgency of the situation the work is assigned to the technician) for each case. Now, they can be created by the agent during the call.

- e. Prices used to be static in the old system and prices would need to be changed manually in all screens which would create problems and errors when a price change occurs. Now prices are parametric and stored in a table and yet when the table is updated, prices in all screens are updated.
- f. Four groups are decided to be taken away such as the customer/distributor branch, FMS (factory central service) /YS (authorized service) branch, GD (included in warranty) /GH (excluded from the warranty) product branch, customer is next to the product/customer is not next to the product branch.
- g. All the question branch groups are revised and there have been some simplifications such as grouping the brands, deleting some similar expressions, deleting the branch of type of refrigerator for repairs, deleting the branch of type of refrigerator for montage and demonstration.
- h. Situations which can be solved over phone and the ones on hold, waiting for the response of the customer has been differentiated. Below answers are defined in the system:

Solved over phone: Chosen when the customer solves the problem after trying the information given by the agent.

Customer will let know after trying: Chosen if the customer cannot pursue the information given but indicates that s/he will get back after trying.

Customer will let know: Chosen when the customer has no idea about the asked question but the agent needs to get an answer in order to process with the registration.

The most effected group after the updates has been the refrigerators. Process lines about this group declined from 18413 to 2229; which is an eighty-eight percent decrease. As a total, 85569 lines have been decreased to 10919 with an eighty-seven percent decrease.

4.3 WHAT IS PLANNED TO BE ACHIEVED WITH THIS PROJECT?

- i. Decreasing the call time of the call centre agents
- ii. Decreasing the number of call centre agents since the call times would be shorter and managing cost cutting as a result
- iii. Increasing customer satisfaction
- iv. Increasing sales team satisfaction
- v. Decreasing the repetitive malfunction registrations by defining the problem right so that the technicians would be able to solve the problem at the first time
- vi. Decreasing complaints related to the call centre

4.4 FURTHER DEVELOPMENTS PLANNED IN THE SYSTEM

- i. The sentence which is the entrance of the decision process to which question group will be followed is going to be simplified. (There will be only the name of the brand, product group and product type left and the screen transaction time will be decreased and yet the reports will be more accurate overall.)
- ii. Price statements in the question groups will be read from a certain list so that the prices given will be accurate and yet the changes will be more manageable.
- iii. Skipping some questions according to the product type (some questions are not needed for some product types as the others). As a result, time saving and increase in customer satisfaction is expected.
- iv. Skipping questions automatically according to the product code with identifying the product specifications. As a result, time saving and increase in customer satisfaction is expected.

4.5 RESULTS OF THE IMPROVED SYSTEM

Project has brought many improvements to the company with solving the problems on phone, decreasing the call time, customer's time of being on hold has decreased. Also, since the call time has decreased, call number per agent has increased. Numeric values according to the improvements are analysed below:

- i. Solving the problems over phone by the directions of the agent has been twenty-one point seven percent of the total calls before the project and this ratio has increased to twenty-three point thirty-two percent after the project was implemented.
- ii. Average call time used to be 174 second before the project and it is decreased to 164 seconds with a five point seventy-five percent decrease rate.
- iii. Waiting on hold time for the customer has decreased from 3 seconds to 1 seconds with a sixty-six point seven percent decrease.
- iv. 10 seconds decrease is maintained for the average call time per agent. As a result, number of calls answered has increased from around 3000 to 3500 with seventeen percent increase percentage. Agent number is planned to be decreased in next year's budget plans.
- v. There is a saving of 10 man/day maintained after the project, from 61 to 51.

5. CONCLUSION

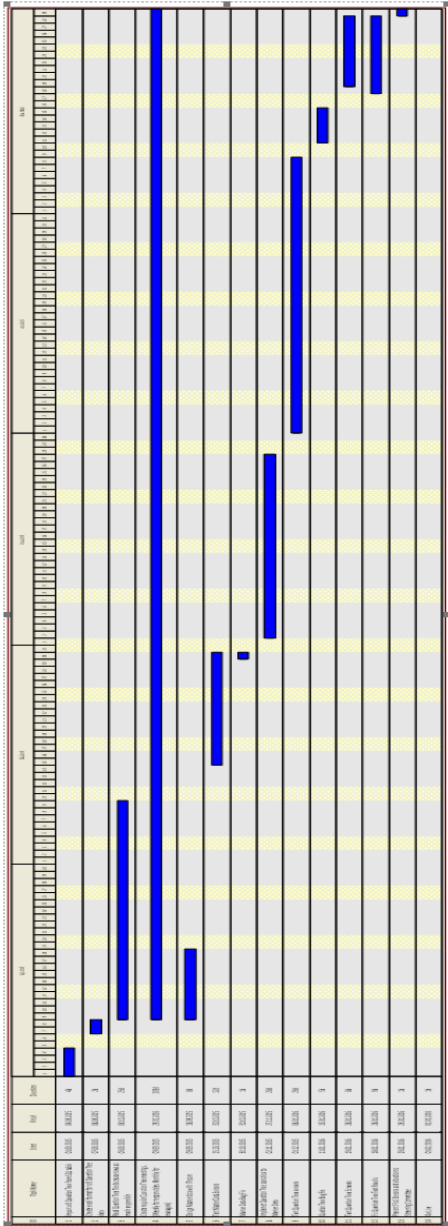
Process improvement is becoming one of the most important things to do in order for a company to be successful in a challenging, competitive world. It is important for the companies to prioritize process management, revise the processes, create a plan and select team members to execute the plan. Plan should be carefully created with analysing all the steps related and yet optimizing the them with the relevant process management methodology. It is also important to set goals properly and in a measurable way so that the results can be analysed and the necessary places can be changed, optimized again to execute the process again and again, until receiving the planned goals.

Another important problem for the companies is to take care of the change management issues, overcome the problems about the staff who resist the change and yet motivate the staff. It is a detailed and sometimes a long process but when it is carefully created and all the workers and the management team is motivated, it brings very positive results to the company in both making the work much easier and also decreasing the costs.

In the BSH optimization project which was reviewed, numeric results show that when the optimization is made carefully, it is possible to achieve the goals. BSH process improvement project brought very positive numeric results in decreasing the call times and making the call centre processes easier with eliminating some questions. As a result, customer satisfaction will be increasing since the call time has decreased as well as the on hold time. Worker satisfaction will also be increasing since the call times are shortened, it will be easier for the call centre agents to achieve their call time targets. Field team; technicians' satisfaction will also be increasing since in the new process, product defects are more accurately defined in a way to lessen the technicians' work and decreased the chance for repetitive visits to the customer for the same problem. At last, cost saving will be achieved by the company as the call times are decreasing. Also, since the call times decreased, agent numbers will be decreasing and yet the cost for hiring agents.

Finally, BSH's project also received recognition by both the global centre of BSH and the business world. Project received an award from Stevie Awards. Stevie Awards is given to the companies and projects which bring contribution to not only the business world but also to the society. Award also aims to announce the innovative works done in the international platform. It has been given since 2002 and is one of the most prestigious awards worldwide. There are thousands of projects evaluated coming from over 30 countries and the evaluations are made very carefully to give the awards to who deserve them the most. It one of the most important and most liked award programmes and yet internationally recognized.

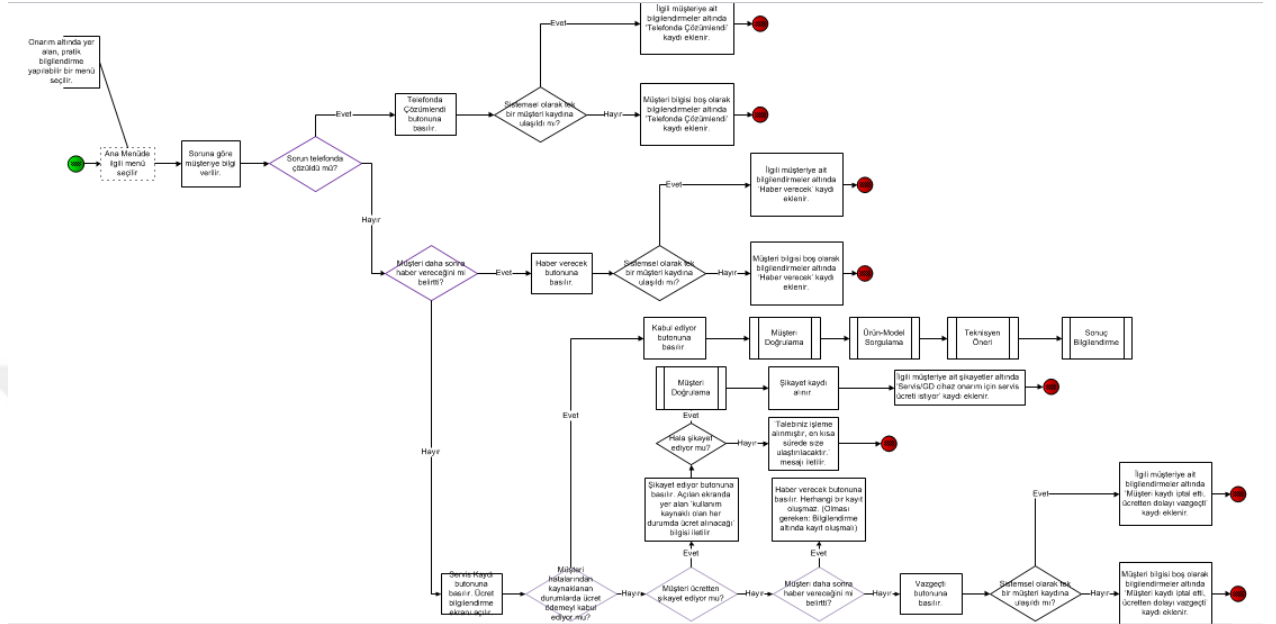
Appendix 1: Gantt Chart



Appendix 2: Tasks

<i>ID</i>	<i>Task Name</i>	<i>Start</i>	<i>Finish</i>	<i>Duration</i>
1	Import old Question Tree from SQL table	01.09.2015	04.09.2015	4d
2	Create excel format for old Question Tree data	07.09.2015	08.09.2015	2d
3	Read Question Tree file decrease rows as much as possible	09.09.2015	09.10.2015	23d
4	Create regular Question Tree meetings. (Weekly for responsables. Monthly for managers)	09.09.2015	29.01.2016	103d
5	Design Master data with IT team	09.09.2015	18.09.2015	8d
6	Test Master Data Screens	15.10.2015	30.10.2015	12d
7	Master Data Bug Fix	30.10.2015	30.10.2015	1d
8	Implemet Question Tree scenatios to Master Data	02.11.2015	27.11.2015	20d
9	Test Question Tree screens	01.12.2015	08.01.2016	29d
10	Qustion Tree Bug Fix	11.01.2016	15.01.2016	5d
11	Test Question Tree Screens	19.01.2016	28.01.2016	8d
12	Fiz Question Tree Test Results	18.01.2016	28.01.2016	9d
13	Present Final Screens and situation to Streering Committee	29.01.2016	29.01.2016	1d
14	Go Live	01.02.2016	01.02.2016	1d

Appendix 3: Flowchart in Turkish



Appendix 4: Report in December, before the project

Home > CallCenterReports > Avaya_AgentPerformance

Home | My Subscriptions | Help

Başlangıç Tarihi: 12/1/2015 Bitiş Tarihi: 12/31/2015

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Operasyon - Çalışan Bazlı - Dönem: 01.12.2015 / 31.12.2015

Çalışan Adı	Çağın Tarihi	Konuşma Kalitesi	Dış Arama Sayısı	Gelen Çağın	Cevaplanan Çağın	Kaçan Çağın	Rona	Transfer	Bekletilen	Ort. Çağın Sonrası (dk)	Toplam Çalışma Süresi	Toplam Mola Süresi	Toplam Çağın Sonrası	Ort. Verimlilik	Gelen Çağın Konuşma Süresi Ort.	Ort. Bekletme
		97,5975	160.783	315.995	315.415	580	217	2.822	16.153	00:00:09	33311:17:28	5251:37:49	770:22:37	%88,94	0:02:54	0:00:51
		98,2196	113.284	48.228	48.161	67	10	555	3.121	00:00:12	7843:25:49	1230:30:38	159:47:33	%97,53	0:02:56	0:00:49
		97,3851	47.499	267.767	267.254	513	207	2.267	13.032	00:00:08	25467:51:39	4021:07:11	610:35:04	%86,12	0:02:53	0:00:51

Appendix 5: Report in January, before the project

Home > CallCenterReports > Avaya_AgentPerformance

Home | My Subscriptions | Help

Başlangıç Tarihi: 1/1/2016 Bitiş Tarihi: 1/31/2016

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01.01.2016 / 31.01.2016

Konuşma Kalitesi	Dış Arama Sayısı	Gelen Çağın	Cevaplanan Çağın	Kaçan Çağın	Rona	Transfer	Bekletilen	Ort. Çağın Sonrası (dk)	Toplam Çalışma Süresi	Toplam Mola Süresi	Toplam Çağın Sonrası	Ort. Verimlilik	Gelen Çağın Konuşma Süresi Ort.	Ort. Bekletme	Ort. Cevap Süresi (sn)	Saatlik Cevaplama Oranı	% Konuşma Süresi
97,9991	148.380	302.593	302.005	588	136	2.291	13.310	00:00:09	31243:03:32	4965:03:26	759:06:56	%88,78	0:02:55	0:00:50	0,77	10	0,4686
98,3081	99.194	44.387	44.242	45	21	479	2.644	00:00:14	7471:14:36	1176:01:52	166:03:06	%97,70	0:03:01	0:00:49	0,51	6	0,2969
97,8938	49.186	258.306	257.763	543	115	1.812	10.666	00:00:08	23771:46:56	3789:01:34	593:03:40	%85,78	0:02:54	0:00:50	0,82	11	0,5226

Appendix 6: Report in February, After the Implementation of the Project

Home > CallCenterReports > Avaya_AgentPerformance

Başlangıç Tarihi: 2/1/2016 Bitiş Tarihi: 2/29/2016

1 of 2 ? Find | Next

tem: 01.02.2016 / 29.02.2016

Arşivi	Konuşma Kalitesi	Dış Arama Sayısı	Gelen Çağrı	Cevaplanan Çağrı	Kaçan Çağrı	Rona	Transfer	Bekletilen	Ort. Çağrı Sonrası (dk)	Toplam Çalışma Süresi	Toplam Mola Süresi	Toplam Çağrı Sonrası	Ort. Verimlilik	Gelen Çağrı Konuşma Süresi Ort.	Ort. Bekletme	Ort. Çalma Süresi (sn)
	98,053	156.561	287.501	286.927	574	160	1.732	9.950	00:00:09	28833:18:51	4585:42:41	682:19:27	%88,97	0:02:48	0:00:46	0,73
	98,606	105.821	44.925	44.859	66	7	403	2.152	00:00:12	7012:13:09	1094:27:06	153:15:36	%96,99	0:02:54	0:00:46	0,49
	97,853	50.740	242.576	242.068	508	153	1.329	7.798	00:00:08	21821:05:42	3491:15:35	529:03:51	%86,24	0:02:48	0:00:46	0,77

Appendix 7: Report in March, After the Implementation of the Project

Home > CallCenterReports > Avaya_AgentPerformance

Başlangıç Tarihi: 3/1/2016 Bitiş Tarihi: 3/31/2016

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tem: 01.03.2016 / 31.03.2016

Arşivi	Konuşma Kalitesi	Dış Arama Sayısı	Gelen Çağrı	Cevaplanan Çağrı	Kaçan Çağrı	Rona	Transfer	Bekletilen	Ort. Çağrı Sonrası (dk)	Toplam Çalışma Süresi	Toplam Mola Süresi	Toplam Çağrı Sonrası	Ort. Verimlilik	Gelen Çağrı Konuşma Süresi Ort.	Ort. Bekletme	Ort. Çalma Süresi (sn)	Saatlik Cevaplama Oranı
	98,0822	130.137	287.828	287.271	557	75	1.827	8.618	00:00:08	27556:32:01	4300:34:28	629:24:45	%87,15	0:02:44	0:00:42	0,84	10
	98,7872	89.057	49.682	49.621	61	4	443	1.820	00:00:10	6691:40:37	1021:58:07	134:02:19	%94,47	0:02:45	0:00:37	0,51	7
	97,8286	41.080	238.146	237.650	496	71	1.384	6.798	00:00:08	20864:51:24	3278:36:21	495:22:26	%84,67	0:02:43	0:00:44	0,91	11

Appendix 8: Report in April, After the Implementation of the Project

Home > CallCenterReports > Avaya_AgentPerformance

Başlangıç Tarihi: 4/1/2016 Bitiş Tarihi: 4/30/2016

1 of 2 ? Find | Next

tem: 01.04.2016 / 30.04.2016

Arşivi	Konuşma Kalitesi	Dış Arama Sayısı	Gelen Çağrı	Cevaplanan Çağrı	Kaçan Çağrı	Rona	Transfer	Bekletilen	Ort. Çağrı Sonrası (dk)	Toplam Çalışma Süresi	Toplam Mola Süresi	Toplam Çağrı Sonrası	Ort. Verimlilik	Gelen Çağrı Konuşma Süresi Ort.	Ort. Bekletme	Ort. Çalma Süresi (sn)	Saatlik Cevaplama Oranı	% Konuşma Süresi
	98,1521	100.335	283.891	283.296	595	132	1.596	7.735	00:00:08	25434:15:31	3931:46:24	660:12:20	%87,36	0:02:41	0:00:42	0,8	11	0,4994
	98,1929	63.436	52.131	52.071	60	6	399	1.728	00:00:12	6351:45:29	971:47:58	170:19:23	%93,99	0:02:47	0:00:39	0,53	8	0,3803
	98,136	36.899	231.760	231.225	535	126	1.197	6.007	00:00:08	19082:30:02	2959:58:26	489:52:57	%85,07	0:02:40	0:00:43	0,86	12	0,5391

Appendix 9: Report in May, After the Implementation of the Project

Home > CallCenterReports > Avaya_AgentPerformance

Başlangıç Tarihi: 5/1/2016 Bitiş Tarihi: 5/28/2016

1 of 2 ? Find | Next

tem: 01.05.2016 / 28.05.2016

Konuşma Kalitesi	Dış Arama Sayısı	Gelen Çağrı	Cevaplanan Çağrı	Kaçan Çağrı	Rona	Transfer	Bekletilen	Ort. Çağrı Sonrası (dk)	Toplam Çalışma Süresi	Toplam Mola Süresi	Toplam Çağrı Sonrası	Gelen Çağrı Konuşma Süresi Ort.	Ort. Bekletme	Ort. Çalma Süresi (sn)
97,8832	33.163	1.624	1.609	15	5	413	1.896	00:00:09	3804:58:53	552:07:21	4:11:10	0:02:21	0:00:30	1,06
97,8832	33.163	1.624	1.609	15	5	413	1.896	00:00:09	3804:58:53	552:07:21	4:11:10	0:02:21	0:00:30	1,06

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