Improving Customers Service at IKEA Using Six Sigma Methodology

Adnan Miski

Abstract— IKEA is an international home furnishing company with a goal of creating a better everyday life at affordable prices. However, in one of their international branches, IKEA has reported substantial revenue loss in 2011 attributed to numerous customer complaints. We executed Six Sigma's DMAIC methodology aimed at revamping the existing business process. SIPOC was used to define overall flow, Data Collection and KANO model for measuring and understanding customers' discontent, Pareto Chart to identify the vital issues, Ishikawa Diagram to analyze the root causes, Affinity Diagrams for suggested improvements, and finally Control Charts to monitor the process implemented. The project successfully reduced the number of complaints from 333 to 43 per month.

Index Terms— Ishikawa, KANO, SIPOC, Six Sigma Methodology

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1 INTRODUCTION

IKEA has been experiencing problems in a few of its branches as far as the sales are concerned. The customer feedback shows that the customers or the clients are dissatisfied with the delivery of the products (in terms of the time taken for the delivery and/or the condition of the product upon delivery) as well as the unsatisfactory customer service. These issues have drastically affected the sales of the branch and also adversely affect the reputation of IKEA. If these problems are not solved IKEA will lose time and money (in terms of fixing the damages caused to the customer), which jeopardizes their overall efficiency and earning potential. Also, undue problems could lead customers to choose another company, and so IKEA can also lose customers.

1.1 Solution Approach

IKEA is facing a high wave of problems from the global competition and the dissatisfaction of customers. In order to compete, they have to find a solution to the problem they are facing. Six Sigma (Define, Measure, Analyze, Improve, and Control) methodologies give the company an opportunity to improve their performance and competitiveness.

2 DEFINE PHASE

2.1 Project Scope

The focus of the project will be on the service level of the company. One important point that will be taken into consideration is the relationship between the employees and customers. It will also focus on the existing services and the activities taken to satisfy the customers. For example, what is the method or process for taking an order from a customer, delivery process, customer care services etc.

The process starts from the point where a customer places an order and stops when the customer receives his order as shown in figure 1 (Appendix A). The method of SIPOC is used to provide a broad view of a process; who is the process owner, how inputs are acquired, whom the process serves, and how it adds value. SIPOC stands for Supplier, Input, Process, Output and finally the Customer. Figure 2 (Appendix

A) shows the SIPOC diagram for the service process at IKEA. The input in the service process is when a customer orders new item or when a customer asks for his item to be repaired. Once this is done, the process starts with processing available data. The activities in this process could be packaging, sorting furniture into categories etc. Once the data is processed, an order is taken and further communication takes place with the supplier in order to check for the availability of the ordered furniture. If the required items are available, the order is confirmed and is supplied to the final customer.

2.2 VOC (Voice of the Customer) Survey Analysis

The "Voice of the Customer" is a process used to capture the requirements/feedback from the customer to provide them with the best service. This provides sufficient information about the quality and customer satisfaction levels on services. As shown in the data collecting section in figure 3 (Appendix A) and the graph of the survey of the customers and the outputs of this process are defining Critical to Quality requirements (CTQ), and the specifications for each CTQ requirement. (1) Reliability and Assurance: The ability of the company to provide the promised services. For example, delivering the ordered item on time. (2) The Response of Customer's Service: The respond to all customer's complaints and inquiries, as well as taking the best action if a certain problem exist. (3) Service Efficiency: The amount of time and effort spent by the customer to choose the desired item and make an order.

3 MEASURE PHASE

3.1 Quality Measures in IKEA

Quality of the service and quality of the products is important to international home products retailers. Every major furniture company views quality differently. In IKEA, home furnishing products must be safe for daily usage as well as environment friendly. In the design phase, product developers and technicians take into account quality and environmental impact at every stage of the new products' development using the least resources to make the best possible products, without

having a negative impact on their functionality or appearance. The main raw materials used in IKEA products are wood, cotton, metal, plastic, glass and rattan and IKEA works towards using as many renewable and recyclable materials as possible. The products produced must meet the customers' expectations and they must be completely free from defects.

3.2 Data Collection

The five main methods used when collecting data are:
- Personal Interviews
- Telephone Interviews
- Group Interviews
- Internet Feedback
- Survey

From the survey we have two results; the first one is about Product Quality Compared to Price as shown in the figure 3 (Appendix A). As many as 50 percent customers thought that the quality/price ratio was good and 18 percent felt that it was very good. No one considered it to be bad.

The other result on the service is shown in the Figure 4 (Appendix A), 40% ranked IKEA's service as good. 16% considered the service to be not so good or bad. According to the interview group, this is due to the fact that some personnel are incompetent or simply bored. Some also thought that the waiting period to get some of the products were too long.

3.3 Metrics

The metric selection has to be effective, that's why we use (SMART):

Simple, Measurable, Actionable (they provide a basis for decision making), Related (to customer requirements), and Timely. In our project:
- Opportunity is defined as a successful order delivery.
- A defect is defined as one customer complaint. Customer complaints include (damaged furniture, not receiving furniture on time, inability to get compensation for damaged furniture, extra charges for new scheduling etc.).

During the year of 2011, IKEA had 11.6% sales decline. Moreover, there was 5.4% of the sales decline caused by the downturn of the economy and other various reasons, and the rest of them (7%) were related to the high volume of customer complaints. The categories of customer complaints are shown in table 2.

Table 2
Frequency of Complaints

Number	Category	Frequency	Percentage
1	Late delivery	17847	29.7%
2	Difficult to get refund by the customer	14446	24.1%
3	Damaged item when deliver	8789	14.6%
4	Poor communication	7643	12.7%
5	Poor communication between departments in the company	5220	8.7%
6	Misleading the customers when purchase	3830	6.4%
7	Others	2221	3.7%
Total		59996	100%

3.4 Benchmarking

Benchmarking is used in management and particularly strategic management, in which organizations evaluate various aspects of their processes in relation to best practices, usually within own sector. This then allows organizations to develop plans on how to make improvements or adopt best practices usually with the aim of increasing some aspect of performance. Benchmarking is a continuous process in which organizations continually seek to challenge their practices. By comparing performance with two of the company's main competitors, (Home Plaza & City Max), areas lacking in quality can easily be identified. Table 3 is the 'benchmarking' table for this project, where some of the IKEA service characteristics are compared with the company's current competitors.

Table 3
Benchmarking

Performance Measures	IKEA	Home Plaza	City Max
Quality Of The Products	4	3	5
Perfect Deliveries	3	4	4
Communication With Customer	3	4	5
Turnaround Time	4	3	3
Inbound Damage By Vendor	4	2	3
Inventory Accuracy	3	4	4
Total Cost Of Labor	4	5	3
Return To Vendor	5	4	4
Workplace Safety	5	5	4

The numerical ratings are done in the scale from 1 to 5, where 1 = poor, 2 = low, 3 = acceptable, 4 = good and 5 = excellent.

- **Quality of the Products**: measures the quality of the products that is offered to the customers.
- **Perfect deliveries**: measures the percentage of perfect deliveries.
- **Communication with Customer**: measures the outcomes of the communication with the customer.
- **Turnaround Time**: tracks the turnaround time on customer service calls and in-shop repair of customer owned merchandise. When people have a problem, the longer they wait, the worse it gets.
- **Inbound Damage by Vendor**: Measure the inbound damage by vendor and steps taken by the supplier (or trucker) to resolve the issue.
- **Number and Percentage of Service Calls**: measures the number of service calls and percentage of calls out of total deliveries. Also keeps track of the reasons service was necessary and the percentage that resolved the problem with a single call. This is an early warning system for factory defects and deficiencies in warehouse and delivery.
- **Inventory Accuracy**: measures the accuracy of inventory measurement systems.
- **Total Cost of Labor**: measures the total cost of all warehouse labor, including benefits. This is calculated as a percentage of the cost of goods received plus the cost of goods shipped.
- **Return to Vendor**: measures the amount of non-saleable merchandise and return to vendor
- **Workplace Safety**: measures the safety of the workplace. The most common way is to count days or staff hours without an accident.

From the result of the benchmarking, we can see the strength and weaknesses among IKEA and its competitors. IKEA lacks in quality in three characteristics (Perfect Deliveries, Communication with customer, and Inventory Accuracy) of the project. But on the other hand, they were the best in three characteristics and equal in the rest.

3.5 Kano Model

KANO model was used to determine how important the safe and proper delivery to the customers. It will also be used to determine what kind of customer service does the clients wants. Following is a brief survey that was conducted:

- If the product is delivered damaged, how would you feel?
- If the product is delivered undamaged, how would you feel?
- If the product is handled properly during delivery, how do you feel?
- If the product is handled improperly during delivery, how do you feel?
- If the customer service is responsive, helpful and address the problem immediately, how would you feel?
- If the customer service is unresponsive and delay the addressing of the problem, how would you feel?

The results in figure 6 (Appendix A) shows that a proper

delivery of undamaged goods and a responsive customer service are a mandatory part of the service, and in absence of these features the customer satisfaction cannot be guaranteed.

4 ANALYZE PHASE

Before any analysis can be done on IKEA's overall performance, we have to first identify the major causes of the company's pitfall. This can be done using Pareto Chart to tackle all the "low hanging fruit" where little effort is needed to fix the few major problem areas. After the identification of the critical areas, a more thorough analysis will be done to resolve all the issues at their root. This can be achieved using the Ishikawa Diagram and 5-Whys analysis.

4.1 Pareto Chart

It is a technique to identify the "vital few" from the "trivial many" (because a high proportion of quality issues resulted from only a few causes). Pareto analysis is based on the Pareto Principle or "80/20 Rule" which means that 80% of problems usually stem from 20% of the causes. Pareto charts are used to display the Pareto principle in action, arranging data so that the few vital factors that are causing most of the problems reveal themselves. Concentrating improvement efforts on these few crucial issues will have a greater impact in addition to being more cost-effective than undirected efforts.

As shown in figure 5 (Appendix A) Pareto Chart, the main focus of effort will be in at the delay in the deliveries for customers. Besides that, IKEA should also focus on 3 other main issues; the difficulty of getting refund by customer, damaged items upon delivery, and poor communication with customer. These 4 major components which contribute 80% customer complaints should be prioritized in terms of improvement efforts.

4.2 Cause and Effect Diagram

This is also known as the "fishbone diagram" or "Ishikawa diagram". Cause and effect diagram enables a team to focus on the content of a problem, not on the history of the problem or differing personal interests of team members. Moreover, it creates a snapshot of collective knowledge and consensus of a team and builds support for solutions. The purpose of the diagram is to summarize the major causes of each issue and to identify potential root causes in an orderly and systematic approach.

Figure 7 (Appendix) shows all the potential causes of each issue captured by the Pareto Chart. These can also be grouped together based on the different major categories; People, Methods, Management, Machines, and Environment and analyze what are the causes and the effects of each category as shown in table 4.

Table 4
Cause and Effect Analysis

Area	Cause	Effect
People	Insufficient training Inexperience drivers	Late delivery Damaged products
Methods	Inefficient route planning	Late delivery
Machines	Lack of navigation system Incompatible lifting system	Late delivery Damaged products
Management	Complicated return policy Difficulty to accept a more improved system	Poor customer service
Environment	Poor communication between employees Unavailable senior experienced staffs Unwilling to provide help and guidance	Poor customer service

4.3 5-Whys Analysis

The 5-Why technique is used to identify the root cause of the problem and also can redefine a problem statement as a chain of causes and effects to identify the source of the symptoms by asking whys. In table 5 there we can see the why's for the high customer complaints.

Table 5
5-Whys customer complaints

Why	Cause
Why there is a high customer complaints rate?	Because there is low quality of customer service
Why there is low quality of customer service?	Because there is no enough training for employees
Why there is no enough training for employees?	Because there is a shortage of staff (trainees)
Why there is a shortage of staff?	Because there is a high staff turnover rate in our customer service department.
Why there is a high staff turnover rate in our customer service department?	Because the staff has low degree pay satisfaction.

From the 5 Whys analysis, it can be seen that one of the issues faced by IKEA is the Crisis of Resources. The more experienced workforce is currently inadequate to provide the necessary training and guidance resulting in low Span of Support which is a vital element in ensuring the success of any team. This inevitably caused a snowball effect on the overall employees' performance. Besides that, IKEA also came out short on one of the most important motivation drivers; the Reward System.

The compensation package offered is not up to par with the industry's standard causing a high turnover rate among employees. This system should definitely be revamped to distinguish between good and poor performers and reward them accordingly.

5 IMPROVE PHASE

5.1 Brainstorming

Our project focuses on the most frequent causes of customers' complaints. The following table summarizes the suggested improvements for each problem.

Table 6
Suggested Improvements

Cause of Complaints	Improvements
Late Delivery	- Introduce a training regime for all drivers - Install GPS devices and trackers into all delivery cars. - Include penalty in case of late delivery. - Introduce awards for most consistent drivers.
Damaged Delivered Items	- Introduce a training regime for delivery labor. - Offer compensations for customers in case of damaged delivered items. - Include penalty for any disregard.
Difficulty To Get A Refund	- Explain the conditions of getting a refund to customers when making an order. - Train employees on how to deal with unsatisfied customers. - Adding a refund policy document online and in stores.
Poor Communication With Customers	- Train workers on how to deal with customer calls, process orders, and enquiries faster. - Introduce a service feedback from the customer after each call from the customer. - Introduce awards "employee of the month".

The suggested improvements are explained below:

- **Late Delivery**:
  - o Drivers

Introducing a training regime for drivers can help reduce defects caused by late delivery. Drivers will know when to leave and how long it will take to deliver the product to a specific address. Factors such as traffic, road works and bad weather can all be avoided if the driver has the required knowledge. Introducing a GPS system will also help avoid the possibility of a driver losing his way around as he will be directly instructed by the navigation system on where to go and what exit to take.

It is important to have a healthy competitive atmosphere among the drivers in the company. If monthly award such as "driver of the month" is introduced, drivers would take their job more seriously and would compete to gain the approval of top management. This will increase the commitment/awareness of drivers therefore, having better end results when delivering products in terms of accurate delivery times.

  - o Manufacturing company

In some cases, late deliveries are not caused by furniture companies. They order the furniture from a certain manufacturing company (factory). Some products might take longer to manufacture than promised. A solution would be to impose a fee on the manufacturing company which would compensate for any late deliveries. If such a penalty exists, the manufacturing company will strive to meet deadlines, and therefore reduces the percentage of late deliveries.

- **Damaged Delivery Items:**

People responsible for delivering furniture should be professionally trained on how to carry items, place them in the desired place etc. Therefore, a training regime must be introduced by the company to avoid receiving complaints from angry customers regarding damaged furniture caused by inept delivery staff. Also, compensations must be offered to customers in the unlikely case of receiving damaged furniture.

- **Difficulty of Getting a Refund:**

The rules of getting refunds should be explained in details to all customers after buying/ordering their products. This can be done by issuing a formal statement that is accessible by everyone. Furthermore, employees should not hesitate to serve customers if he/she qualifies for a refund. Employees should also be trained to deal with angry customers in order to avoid any negative feedbacks and to increase the overall satisfaction of the company's services.

- **Poor Communication with Customer:**

Introducing a new communication system between departments will ease the process of transferring the calls from one representative to another. This will reduce customers' wait time. Also, it is vital to train employees on how to answer phone calls from customers, how to process enquiries, how to deal with dissatisfied customers, etc. Awards given to best employees will create a healthy competitive environment within the company and will ensure getting the best out of every employee, therefore, increase the satisfaction level of customers.

5.2 Affinity Diagram

The affinity diagram in figure 8 (Appendix A) is a business tool used to organize and simplify possible suggestions for improvements. It is one of the seven management and planning quality tools and it aids top management to lay out what needs to be done.

5.3 Error Proofing Using Source Inspection:

Process mapping before improvement (Figure 9 left Appendix A):

- An order is collected from the customers
- Employees carry on an availability check with the supplier, if the ordered items are available, the order is processed. If the ordered items are not available, the order is changed or is ordered from the manufacturer causing extra delay.
- Once the order is processed, a confirmation is send to the customer and a date is arranged for delivery.
- Order is complete
- Process mapping after improvement (Figure 9 right Appendix A):
- An order is collected from the customers
- Employees carry on an availability check with the supplier, if the ordered items are available, the order is processed. If the ordered items are not available, notify the customer.
- The order is verified with the customer to check if the right order was placed. If the order was wrong, the order is corrected.
- The order is confirmed with the customer, if the customer approves, a confirmation letter is sent to the customer. If the customer disapproves, the order is changed.
- The order is reconfirmed with the supplier and a date is scheduled for the delivery to take place and the order is complete. If the supplier didn't confirm the order, the customer is asked if he wants to change his order, if this was the case, a new order is placed and the cycle starts all over again.

Finally, we were fortunate to have IKEA implement our suggested improvements in a short time. They carried the improvements on their own and informed us with the progress.

6 CONTROL PHASE

After implementing the improvements at IKEA, we monitored the process using control charts.

6.1 Control Charts:
- **R-Chart:**

Examining the range chart first in (Appendix B), it appears that the process is in control. All points lie within the control limits and no unusual pattern exist. The overall mean is 42.88,

average range is 63.3, and average standard Deviation is 23.09. Control limit for the R-chart are:

UCL = D4Rbar = 121.536 $\qquad$ with D4 = 1.92

LCL = D3Rbar = 5.06 $\qquad$ with D3 = 0.08

- **X-bar Chart**

Examining the x-bar chart in (Appendix B), it appears that the process is in control. All points lie within the control limits and no unusual pattern exist. The overall mean is 42.88, and average standard Deviation is 23.09. Control limits for the X-bar chart are:

UCL=Xbar+A2Rbar = 69.46 $\qquad$ with A2 as 0.42

LCL = Xbar-A2Rbar = 17.30

- **S-Chart**

The standard deviation chart shows that the process is in control (Appendix B). All points lie within the control limits and no unusual pattern exist. The overall mean is 42.88, and standard Deviation is 23.09. Control limits for the S-Chart are:

UCL=43.46 $\qquad$ LCL=2.725

6.2 Summary Table

After implementing our improvements, we managed to decrease the number of complaints from an average of 333 complaints per month to an average of 43 per month. The categories of customer complaints after improvement are shown on table 8.

7 CONCLUSION/RECOMMENDATIONS

The aim of the project was to help increase the level and quality of services offered at IKEA furniture stores. After applying our project, and using our suggested methods of improvements, such as introducing GPS devices for drivers to find their way efficiently, training customer service personnel to handle the customers properly and rewarding employees on good performance, IKEA managed to decrease the number of unsatisfied customers from an average of 333 complaints per month to an average of 43 complaints per month.

Table 8
Frequency after improvement

Number	Category	Frequency	Percentage
1	Misleading the customers when purchase	1303	21.77%
2	Poor communication between departments in the company	1105	18.47%
3	Poor communication with customer	973	16.26%
4	Late delivery	725	12.12%
5	Damaged item when deliver	723	12.08%
6	Difficult to get refund by the customer	632	10.56%
7	Others	523	8.74%
Total		**5984**	**100%**

8 SUPPORT DOCUMENTATION (APPENDIX A)

8.1 Structure of the Solution
8.1.1 Project Charter

Table 1
Project Charter

Project Name: Improving the Customer Service level at IKEA
Methodology: Implementing Six Sigma methodologies (DMAIC)

Start Date: 29th Jan 2013	Target Completion Date: 13th May 2013

Element	Description	Charter
Process	The process in which opportunity exists.	Receiving an order, Responding from the Customer Service, Furniture Availability, Delivery time of Furniture (figure 1)
Project Description	Practical problem and goal statement	Increase efficiency, customer service, reliability in the processes related to furniture delivery process
Business Cases	Improve the financial expectations	Decrease number of unhappy customers by 60%
Project Scope	Finding the parts of the process that will be investigated and excluded.	Response time after receiving an order, communication between drivers and the stuff for taking order, professionalism of delivery staff, refund policy, furniture availability update.
Benefit to External Customers	Who is the final customer? What benefits will they see?	The customer measurement will be based on: The delivery time, customer service quality, and the refund process.

8.1.2 Workflow Process Map

The order and delivery process is shown in figure 1 starts from placing the order from the customer until receiving it. The process starts with ordering an item, then checking the availability of the item. If the item is not available there will be

a delay in the order because it will be ordered from the manufacture. On the other hand, if the item is available then the employees will schedule a delivery time for the customer and the order will be processed once the payment is made.

Finally, the delivery stage, the process is done by delivering the item. If there will be a delay for any reason the customer will be informed before the delivery day with an explanation of the delay reason. But if the customer is not satisfied with the service or the reasons of the delay he/she can contact the customer service and complain about it, then a further action will be taken by top management

Figure 1: Workflow Process

8.1.3 SIPOC
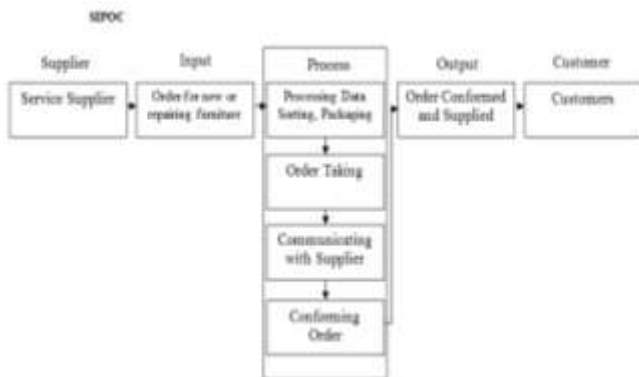
Figure 2: SIPOC

8.1.4 Data Collection

From the survey, it was found that 50% of the customers had liking towards the product quality to price ratio. 18% of the
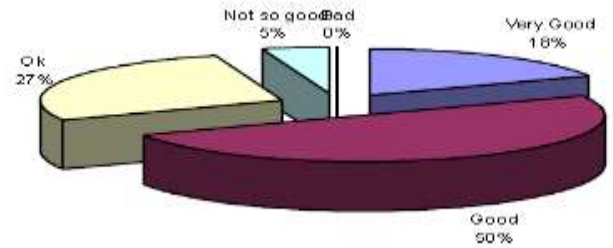
customer very much satisfied with the product quality to price ratio. A survey on the service provided by IKEA was taken which clearly shows that 40% of the customers were satisfied with their service. Moreover, 39% of them were ok, and only 2% were very dissatisfied.

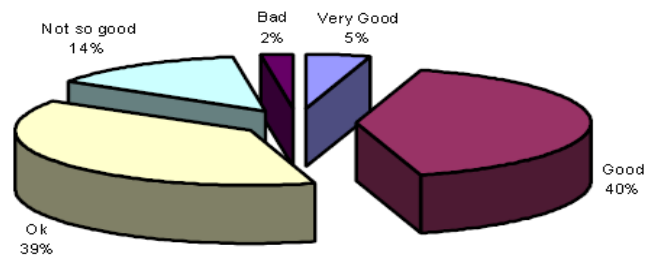

Figure 3: Product Quality compared to price

Figure 4: IKEA Service

8.1.5 Pareto Chart

An analysis was made on the Pareto chart to identify the major root causes which were a vital few from a trivial many. It was found from the analysis that the major problem lies on late delivery of the orders. The other factors which also led to larger volume of complaints were the inability to process refund, items damaged during delivery and poor communication with the customer.
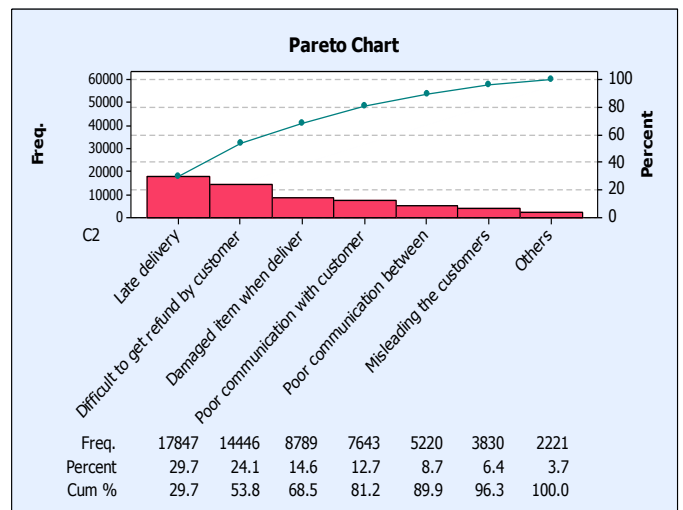

C2	Late delivery	Difficult to get refund by customer	Damaged item when deliver	Poor communication with customer	Poor communication between	Misleading the customers	Others
Freq.	17847	14446	8789	7643	5220	3830	2221
Percent	29.7	24.1	14.6	12.7	8.7	6.4	3.7
Cum %	29.7	53.8	68.5	81.2	89.9	96.3	100.0

Figure 5: Pareto Chart

8.1.5 Kano Model

In Kano Model, lists of questions were asked in a survey to the customers and their feedback is recorder above. This tool helped us understand how important it is deliver the order to the customer, safely and promptly without any delay.

Questions	Mandatory	Linear	Exciter	Questionable	Reverse	Indifferent
If the product is delivered damaged, how would you feel?	0	0	0	2	8	0
If the product is delivered undamaged, how would you feel?	5	2	3	0	0	0
If the product is handled properly during delivery, how do you feel?	4	5	0	0	0	1
If the product is handled improperly during delivery, how do you feel?	0	0	0	7	4	1
If the customer service is responsive, helpful and address the problem immediately, how do you feel?	3	2	4	0	0	1
If the customer service is unresponsive and delay the addressing of the problem, how dos you feel?	0	0	0	1	9	0

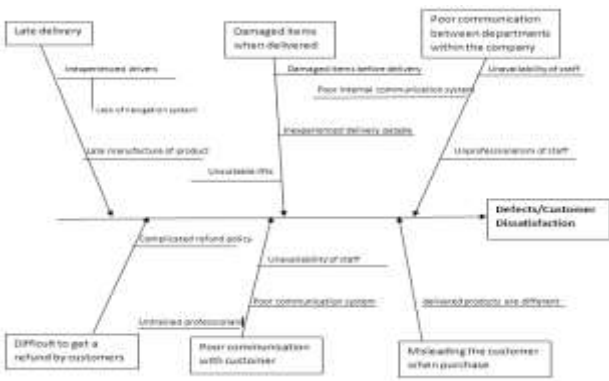Figure 6: Kano Model

8.1.6 Cause and Effect Diagram

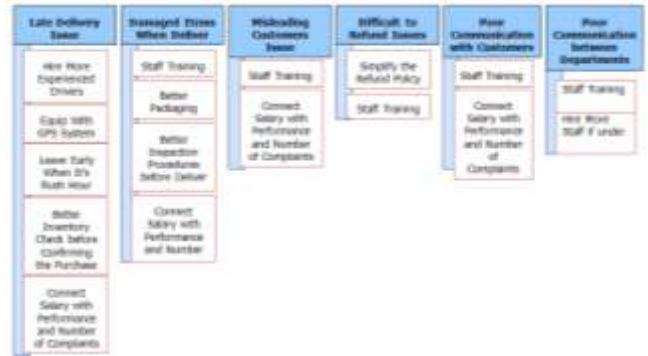Figure 7: Cause and Effect

8.1.7 Affinity Diagram

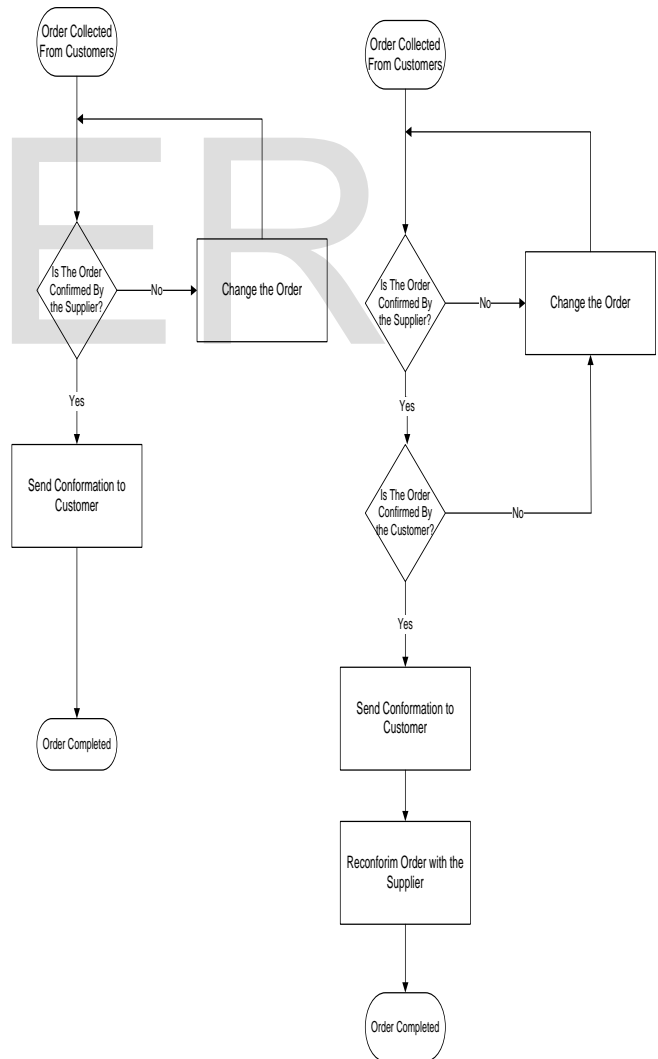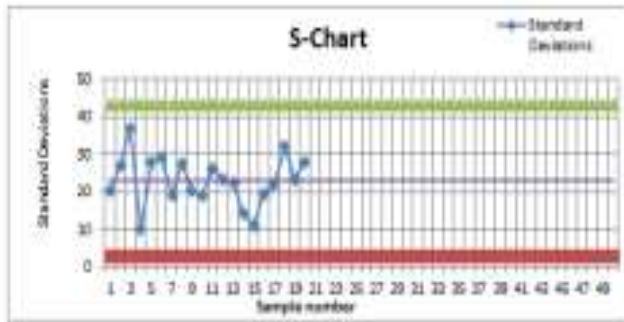

Figure 8: Affinity Diagram

8.1.8 Process Mapping

Figure 9: Process Mapping

9 SUPPORT DOCUMENTATION (APPENDIX B)

9.1 Control Charts

The Control Charts were constructed based on the new and improved process mapping and were implemented to find out whether there are any irregularities or out of control in the process.
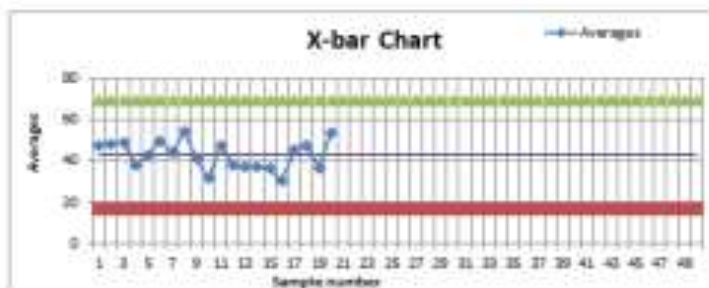

R-Chart

By observing the range chart, it was found that the process is under control and there are no unusual patterns. All the points fall between the limits and most points are near the process average. The overall mean is 42.88, average range is 63.3, and average standard Deviation is 23.09
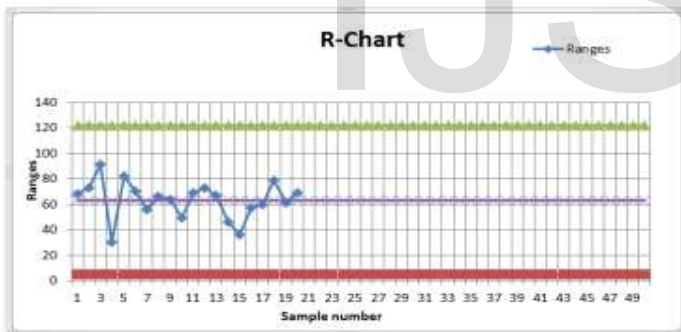
X-bar Chart

By observing the X-Bar chart, it was found that the process is under control and there are no unusual patterns. All the points fall between the limits and they appear to be randomly distributed. The overall mean is 42.88, and average standard Deviation is 23.09.

S-Chart

By observing the S chart, it was found that the process is under control and there are no unusual patterns. All the points fall between the limits and equal number of points above and below centerline.

The implementation of these control charts gave us a better understanding of the improvements that were made in the process. By determining the upper and lower control limit and further plotting the points which were between the limits, it clearly indicates that the improvement regarding the service level has raised and has given us a scope for a larger improvement.