

Improving Call Center at Universidad Ana G. Méndez

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Abstract — *In today's dynamic business environment, call centers serve as pivotal touchpoints between organizations and their stakeholders, necessitating constant optimization to meet evolving demands. This abstract presents a nuanced examination of strategies aimed at enhancing call center operations within the context of Universidad Ana G. Méndez (UAGM). Through the lens of methodologies such as DMAIC, Voice of the Customer analysis, and Value Stream Mapping, this study delves into the identification and resolution of key challenges such as high call abandonment rates and inefficient workflow processes. By synthesizing empirical research and industry best practices, the study offers actionable insights to transform UAGM's call center into a strategic asset, fostering improved customer satisfaction, operational efficiency, and organizational competitiveness. This research contributes to the broader discourse on call center management and underscores the importance of proactive adaptation to meet the demands of contemporary service provision.*

Key Terms — *Call Center Efficiency, DMAIC Methodology, Operational Optimization, Voice of the Customer Analysis.*

INTRODUCTION

In today's dynamic business environment, call centers serve as pivotal touchpoints between organizations and their stakeholders, necessitating constant optimization to meet evolving demands. This abstract presents a nuanced examination of strategies aimed at enhancing call center operations within the context of Universidad Ana G. Méndez (UAGM). Through the lens of methodologies such as DMAIC, Voice of the Customer analysis, and Value Stream Mapping, this study delves into the

identification and resolution of key challenges such as high call abandonment rates and inefficient workflow processes. By synthesizing empirical research and industry best practices, the study offers actionable insights to transform UAGM's call center into a strategic asset, fostering improved customer satisfaction, operational efficiency, and organizational competitiveness. This research contributes to the broader discourse on call center management and underscores the importance of proactive adaptation to meet the demands of contemporary service provision.

In the contemporary landscape of customer service, call centers stand as the pivotal interface between organizations and their clientele. With the digital age fostering ever-increasing expectations for efficiency, responsiveness, and quality service, the imperative to enhance call center operations has never been more pressing. This project embarks on a comprehensive exploration of strategies and innovations aimed at elevating the performance of the call center at UAGM to meet and exceed the evolving demands of the modern business landscape.

The relevance of this project is underscored by the central role that call centers play in customer experience and satisfaction. As UAGM strives to establish and maintain enduring customer relationships, the ability to provide exceptional service through call center interactions becomes paramount. Moreover, in an era marked by intense competition and rapidly evolving technology, the strategic optimization of call center operations can serve as a crucial differentiator in the marketplace.

The ultimate aim of this project is to contribute valuable insights to UAGM's call center management. By addressing the challenges faced by the call center and proposing innovative solutions, this project aspires to assist UAGM in transforming its call center operations from cost centers into

strategic assets. By the conclusion of this journey, we hope to provide a roadmap for call center excellence at UAGM, one that not only benefits the university but also enhances the experiences of customers who seek efficient, effective, and satisfying interactions.

Literature Review

Call centers are vital components of modern business operations, serving as a primary interface between organizations and their customers. Ensuring their efficient and effective performance is crucial for maintaining customer satisfaction and loyalty. The Six Sigma methodology, particularly the DMAIC approach (Define, Measure, Analyze, Improve, Control), has gained popularity as a structured framework for continuous process improvement in various industries. This literature review aims to explore the application of DMAIC in the context of call centers, focusing on how it has been used to identify and rectify operational problems.

The first phase of DMAIC, 'Define,' involves identifying and articulating the specific problems within a process. In the context of call centers, these issues can range from long customer wait times and high call abandonment rates to low first-call resolution rates. Several studies have focused on defining the problems unique to call centers.

The 'Measure' phase of DMAIC emphasizes data collection to understand the current state of the process. Researchers in the call center domain have utilized various metrics, such as Average Handle Time (AHT), Service Level, and Customer Satisfaction Scores, to quantify performance.

- **'Analyze'** is a crucial phase where the root causes of the identified issues are determined. This phase involves the use of various tools such as root cause analysis, Pareto charts, and process flow diagrams. In the call center context, studies have explored the root causes of problems like agent burnout and customer dissatisfaction.
- The **'Improve'** phase involves generating and implementing solutions to address the root

causes. Call centers have introduced various strategies to improve their operations, including better agent training, streamlined call routing, and improved technology integration.

- The final **'Control'** phase focuses on maintaining the improvements achieved through DMAIC. This phase involves setting up monitoring systems and instituting regular reviews. Call centers often employ real-time monitoring, quality assurance programs, and performance dashboards to sustain improvements [1].

The application of DMAIC methodology in call centers has demonstrated its effectiveness in addressing and rectifying operational problems. By following the DMAIC framework, call centers have been able to define issues, collect relevant data, analyze root causes, implement improvements, and maintain the gains achieved. While there is a growing body of literature on this topic, further research is needed to explore the specific challenges and opportunities that different types of call centers may face, as well as the integration of emerging technologies in the DMAIC process for continuous improvement.

In conclusion, the DMAIC approach offers a structured framework for call centers to enhance their operational efficiency and deliver improved customer experiences. Its systematic approach to problem-solving and data-driven decision-making provides a valuable tool for call center managers and researchers alike.

METHODOLOGY

Amidst the initial stage of the DMAIC (Define, Measure, Analyze, Improve, Control) methodology, the Voice of the Customer (VoC) assumes pivotal significance in comprehending and redressing customer needs. Client's articulate dissatisfaction when confronted with protracted response intervals, deficient communication, and unresolved issues. The overarching motif is a perceived disjunction between customer anticipations and the dispensation of service received. Punctuality, efficacious

correspondence, and well-versed personnel emerge as salient domains necessitating refinement [2]. Moreover, patrons underscore the fiscal repercussions on their contentment, signifying an anticipation of commensurate value for the remunerative services procured. The VoC underscores the exigency of addressing personnel conundrums, lacunae in agent acumen and holistic fiscal administration to augment the customer encounter. Acknowledging the potential for contractual severances and productivity diminutions, companies should accord precedence to expeditiously redressing customer predicaments and investing in judicious training for their personnel. The VoC also emphasizes how important resource planning and time management are to ensuring effective service delivery and reducing customer discontent. In conclusion, the 'Define' phase highlights the necessity of a customer-centric strategy, matching organizational procedures with client demands in order to promote long-term connections and spur changes.

Based on consumer satisfaction, the Kano Model provides a framework for ranking and enhancing a product or service's features or components. It divides characteristics into five categories: Reverse Needs, Indifferent Needs, Excitement Needs, Performance Needs and Basic Needs. It starts with gathering data to identify the issue and establish project goals during the identify phase of DMAIC (Define, Measure, Analyze, Improve, and Control).

Using the Kano Model framework for the DEFINE phase of DMAIC, Table 1 lists customer complaints related to the service. The complaints that have been found fall into two categories: Basic Needs and Performance Needs. Basic Needs are essential to ensuring customer happiness. Basic Needs complaints include things like slow response times, poor communication, unresolved problems with improper follow-up, understaffed, long wait times, and ignorant agents. Addressing these issues is necessary to meet the minimal expectations of customers. In addition, the chart lists high prices, contract terminations, and possible revenue loss as

Basic Needs, highlighting their substantial influence on both financial results and consumer happiness.

Table 1
Data for Kano Model

Customer Complaint	Kano Model Classification	Importance (High/Medium/Low)
Response time is too slow	Performance Needs	High
Communication is not effective	Basic Needs	High
Unresolved issues with improper follow-up	Basic Needs	High
Insufficient staffing leading to long wait times	Basic Needs	High
Agents lacking knowledge	Basic Needs	High
Decreasing Income	Basic Needs	High
Contract terminations due to dissatisfaction	Basic Needs	High
Low profitability due to high cost	Basic Needs	High
Inefficient time management in hiring and training	Basic Needs	High

Critical-to-Quality (CTQ) attributes are those that have a direct impact on a product's or service's quality and are essential to customer satisfaction. The following list of CTQs is based on the specifics of the Kano Model and the Voice of the Customer (VOC) (Figure 1):

- Response Time
- Effective Communication
- Issue Resolution
- Staffing Levels
- Agent Knowledge
- Customer Income Protection
- Contract Satisfaction
- Cost Management
- Efficient Time Management
- Customer Satisfaction

By acting as centers of attention for initiatives to improve, these CTQs make sure that the crucial factors influencing customer happiness and service quality are given top priority and are effectively handled. [3] (Refer to Figure 2).

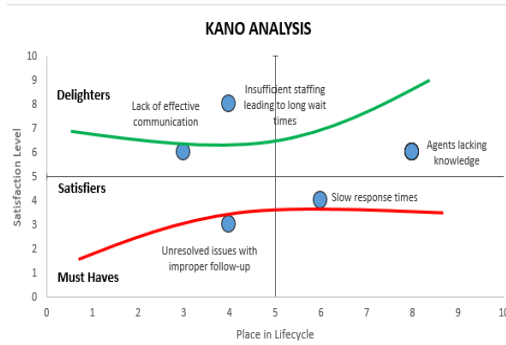


Figure 1
Kano Model Against VOC

Enhancing the Call Center Experience at UAGM	
Project Manager	
Project Sponsor	
Project Start Date	30-Jan-24
Project End Date	25-Aug-24
Project Objectives	Project Risks
Increasing efficiency and affectiveness	Resistance to change from existing staff.
To elevate customer satisfaction levels and improve the overall call center experience.	Technological implementation challenges.
To optimize workforce management and resource allocation for better performance.	Potential disruptions during the transition period.
To integrate advanced technological solutions for streamlined processes.	Project Deliverables
To develop and implement customer-centric strategies for interactions.	Detailed analysis report of existing call center operations.
To create a roadmap for ongoing call center improvement and sustainability.	Improved workforce management and resource allocation plan.
Project Scope	Technological solutions integration plan.
Examination of existing call center procedures, workflows, and protocols.	Customer-centric interaction strategies.
Evaluation of workforce management practices and staffing requirements.	Comprehensive project plan with recommendations.
Assessment of technology utilization and potential areas for improvement.	Project Milestones
Development and implementation of customer-centric strategies.	Completion of Call Center Analysis (Date)
Data collection and analysis to inform decision-making.	Implementation of Workforce Management Plan (Date)
Creation of a comprehensive project plan outlining specific recommendations.	Integration of Technological Solutions (Date)
Project Purpose	Rollout of Customer-Centric Strategies (Date)
Transform the call center at UAGM into a strategic asset that delivers exceptional service, fosters positive customer interactions, and meets the evolving demands of the modern business landscape.	Project Closure and Evaluation (Date)

Figure 2
Project Charter

The project charter describes a comprehensive program designed to improve Universidad Ana G. Méndez's (UAGM) call center experience. Under the direction of a designated project manager, the main goals are to enhance the efficacy and efficiency of call center operations, raise customer satisfaction, optimize workforce management, integrate cutting-edge technology solutions, apply customer-centric strategies, and create a continuous improvement roadmap.

The project's scope includes a detailed examination of current labor management strategies, contact center protocols, technological applications, and interactions with consumers. The ultimate goal is to turn the call center into a strategic asset that meets the changing needs of the modern corporate setting while providing great customer service as well as fostering good client interactions.

In the Measure stage of the DMAIC (Define, Measure, Analyze, Improve, and Control) framework, the primary objective revolves around quantifying the existing condition of the process and establishing a fundamental performance baseline. Drawing from the provided dataset, we can delineate key performance indicator (KPIs) and execute pertinent assessments:

- **Inbound Calls:**
 - **Measure:** Calculate the average number of inbound calls per month to understand the overall call volume.
 - **KPI:** Average Inbound Calls per Month
- **ADC (Answered Calls):**
 - **Measure:** Determine the percentage of answered calls out of the total inbound calls.
 - **KPI:** Percentage of Answered Calls
- **Abandoned Calls:**
 - **Measure:** Calculate the percentage of abandoned calls to assess the efficiency of handling incoming calls.
 - **KPI:** Percentage of Abandoned Calls
- **Outgoing Calls:**
 - **Measure:** Evaluate the average number of outgoing calls per month to gauge the level of proactive communication.
 - **KPI:** Average Outgoing Calls per Month
- **All Calls:**
 - **Measure:** Summarize the total number of calls (inbound, answered, abandoned, and outgoing) to provide an overview of the overall call activity.
 - **KPI:** Total Calls per Month

These KPIs will aid in quantifying the efficacy of the telephonic center process across the specified

lunar cycles. Following the establishment of these assessments, deeper scrutiny can be undertaken to pinpoint trends, configurations, and realms for enhancement in the MEASURE stage of the DMAIC framework. The information can be visually portrayed through graphical representations, such as diagrams or charts, to amplify visibility and facilitate a more exhaustive comprehension of the telephonic center's efficiency.

Data Collection

The "Inbound Calls" display a range of demand levels and with July 2023 showing a discernible decline. Knowing the call center's capabilities and efficacy requires knowing the "ADC Calls" and "Outgoing Calls" figures which can be seen in above Table 2. There were a lot of incoming calls in August 2022, and many of them were answered (ADC Calls). The overall number of calls declines in the next months, particularly in July 2023. The low number of abandoned calls, or "Aban Calls," suggests effective call management. The ratio of outgoing calls to incoming calls appears to be lower, indicating a more reactive strategy than intentional outreach. Potential Questions for Further Analysis:

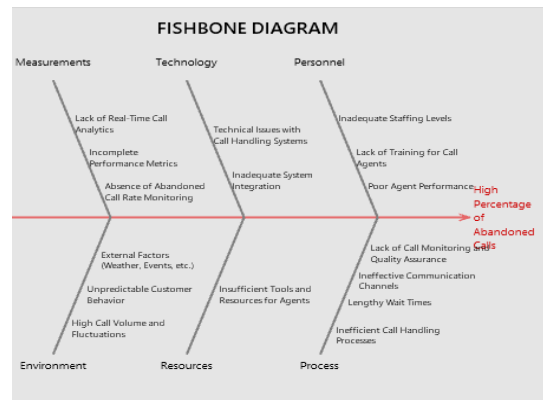
- Why did July 2023 see a drop in the overall number of calls?
- Exist any particular patterns or trends in the data that can point to problems or areas in need of improvement?
- What is the average handling time for each call, and how does it impact overall performance?
- Why the high percentage of abandoned calls is?

Table 2
Data Collection

Date 2022-23	Inbound Calls	ADC Calls	Aban Calls	Out-going Calls	All Calls
22-Aug	6000	5149	851	2324	8324
22-Sep	2743	2575	168	404	3147
22-Oct	3452	2961	491	795	4247
22-Nov	1883	1710	173	417	2300
22-Dec	1810	1676	134	348	2158
23-Jan	3286	2863	423	600	3886
23-Feb	2425	2299	126	332	2757
23-Mar	2589	2425	164	318	2907
23-Apr	1739	1541	198	208	1947
23-May	2259	1932	327	95	2354
23-Jun	1565	1367	198	139	1704
23-Jul	1045	867	178	85	1130

One particular issue that has been detected, according to the statistics and information supplied, may be "High Percentage of Abandoned Calls." This issue may have a detrimental effect on customer happiness and overall service quality, as seen by the 12.16% abandonment rate of calls. Let's make a Table 3 for an Ishikawa diagram, or fishbone diagram, to examine possible reasons for this issue.

Table 3
Data for Fishbone Diagram



A visual aid known as a fishbone diagram is used to classify and identify the reasons of a certain issue, in this example, the "High Percentage of Abandoned Calls" (Figure 3). The People, Process, Technology, and Resources components or categories branch out from the centrally located sketch of the problem in the diagram.

People	Process	Technology	Resources	Measurement	Environment
Inadequate Staffing Levels	Inefficient Call Handling Processes	Technical Issues with Call Handling Systems	Insufficient Tools and Resources for Agents	Lack of Real-Time Call Analytics	High Call Volume and Fluctuations
Lack of Training for Call Agents	Lengthy Wait Times	Inadequate System Integration		Incomplete Performance Metrics	Unpredictable Customer Behavior
Poor Agent Performance	Ineffective Communication Channels			Absence of Abandoned Call Rate Monitoring	External Factors (Weather, Events, etc.)
	Lack of Call Monitoring and Quality Assurance				

Figure 3
Fishbone Diagram

Particular reasons that might be behind the large number of abandoned calls are mentioned under each category. For example, low agent performance, inadequate staffing numbers, and call agents' lack of training are among the issues under the People section. Long wait times, inadequate communication

channels, and efficient call management procedures are all included in the Processing category. Technical problems with call handling systems and insufficient system integration go under the Technology category, while elements like a lack of tools and resources for agents fall under the Resources category. This fishbone diagram facilitates an organized approach to problem-solving and improvement efforts in later stages of the DMAIC technique by acting as a visual aid for the methodical analysis of the root causes of the detected issue.

Identifying and ranking the reasons or elements that contribute to a given outcome is necessary in order to create a Pareto chart. The initial step in handling abandoned calls is to compile and examine the information that is currently accessible. Data including call duration, time of day, customer information, and technical difficulties could be included in this data. The next stage is to classify and measure the many reasons why calls are abandoned after the pertinent data has been gathered. Through the process of allocating percentages to each reason according to their frequency or impact, it becomes evident which variables have a major influence on the total number of abandoned calls.

Organizations may increase customer satisfaction and operational efficiency by concentrating their efforts on tackling the most significant problems that will have the most impact on minimizing call abandonment percentages thanks to this prioritized which can be seen in below Figure 4. In the end, the Pareto chart is a useful instrument for data-driven decision-making when trying to maximize customer service and improve call center productivity.

A technique for visualizing and analyzing the phases in a process is value stream mapping, or VSM. To enhance call center workflow, we may make an Excel table that shows the important phases, tasks, and measurements. The data to draw value stream mapping shown in Table 4 for the highlighted issue of a "High Percentage of Abandoned Calls" The value stream mapping sample table for the

highlighted issue of a "High Percentage of Abandoned Calls" is shown in Figure 5.

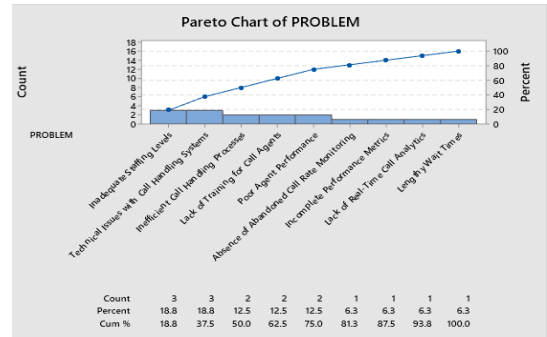


Figure 4
Pareto Chart on Causes

Table 4
Value Stream Mapping Data

PROCESS	Activity Time (in minutes)	Wait Time (in minutes)	Total Lead Time (Activity + Wait)
Call Initiation	1		3
Call Routing	1	2	3
Agent Answering Call	5	1	6
Initial Assessment	3	2	5
Attempted Issue Resolution	10	5	15
Escalation or Additional Assistance	5	3	8
Call Conclusion and Documentation	4	1	5
Post-Call Wrap-Up and Notation	2	1	3

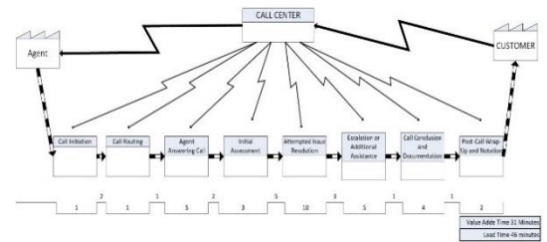


Figure 5
Value Stream Mapping

Value Stream Mapping (VSM) study provides valuable information about call center operations. The entire lead time, from the beginning of the call to the end, is 46 minutes, of which 31 minutes are value-added time and 15 minutes are non-value-added time (waste). This breakdown shows that while there is still need for improvement in decreasing non-value-added time, a substantial amount of process time is spent on activities that directly contribute to the demands of the customer (value-added time).

Reducing wait times, maximizing agent productivity, and expediting call routing and escalation procedures are some possible areas of improvement. Through the detection and fixation of

these ineffectiveness, the contact center may strive to improve lead time, increase overall process efficiency, and ultimately boost customer satisfaction by providing quicker and more efficient support. The VSM analysis is a useful tool for identifying areas in need of improvement and directing the execution of specific improvements to the call center procedure.

The Improve phase is a crucial step in the DMAIC (Define, Measure, Analyze, Improve, Control) approach that focuses on putting solutions into place and improving call center operations to solve issues which have been found, especially the issue of a "High Percentage of Abandoned Calls." Value Stream Mapping (VSM), Pareto analysis, Kano diagram, and other studies yield excellent conclusions that are useful for creating sustainable strategies for improvement.

Throughout the Improve phase, constant interaction and coordination between the call center employees, stakeholders, and the project's management team are crucial. Frequent evaluations of project progress and feedback loops guarantee that the modifications put into place are in line with the goals of the project and provide noticeable gains. The team tracks key performance metrics as solutions are put into place to assess how the modifications are affecting customer happiness, call center effectiveness while and the decline in phone calls that are abandoned.

The Improve phase is a dynamic step that involves turning the conclusions from different assessments into practical recommendations. The call center may significantly enhance its operations and give customers and agents a more effective and fulfilling experience by concentrating on the aspects that the Kano diagram and Pareto analysis identified as most important and by utilizing the particular methodological insights obtained from the Value Stream Mapping.

Each action in the above improvement strategy has an identifier number in the plan, and more information about it include the particular improvement action, the department or person in charge of it, the suggested implementation timetable,

and the anticipated result. To reduce waste and improve overall call center efficiency, the strategy focuses on Lean practices such technology integration, training, process optimization, and continuous monitoring. Frequent Gemba Walks, which entail a comprehensive review of work environments, guarantee continuous enhancement and flexibility in response to evolving circumstances. This strategy acts as a methodical roadmap for putting Lean concepts into operation and bringing about constructive adjustments to the call center workflow. (See Table 5).

Table 5
Lean Improvement Plan

Lean Improvement Plan				
No.	Improvement Action	Responsible Party	Timeline (months)	Expected Outcome
1	Implement Lean Training for Call Agents	Training Department	1	Improved efficiency in issue resolution
2	Optimize Call Routing and Escalation Processes	Operations Team	2	Reduced wait times and improved call flow
3	Enhance Real-Time Call Analytics Integration	IT Department	3	Better monitoring and proactive response
4	Implement Performance Metrics for Continuous Monitoring	Quality Assurance	1	Regular assessment for ongoing improvement
5	Introduce Automated Customer Callback System	Technology Team	4	Reduced customer frustration and abandoned calls
6	Streamline Communication Channels	Communication Team	2	Improved customer-agent interaction
7	Conduct Regular Gemba Walks for Process Observation	Improvement Team	Ongoing	Real-time identification of process inefficiencies

The last step of the DMAIC (Define, Measure, Analyze, Improve, Control) approach is called the controlling phase. During this phase, the call center's performance is continuously monitored to ensure that the changes made during the improvement phase are maintained. During this stage, management systems are put into place, key performance indicators (KPIs) are tracked, and a continuous improvement framework has been developed. The Control phase must include both feedback cycles and ongoing monitoring. The performance of the call

center is communicated to all partners through regular performance assessments, team meetings, and avenues of communication. In addition, the team follows the Lean Improvement Plan's instructions and periodically goes on Gemba Walks to watch the process up close, spot any new problems, and make enhancements in real time in order to maintain efficiency.

Within the call center, a culture of continual improvement is created during the Control phase. It entails motivating and educating employees to see problems early on and take action right away, as well as cultivating a feeling of commitment for the call center's overall success. By means of consistent data analysis, feedback mechanisms, and continuous process optimization, the Control phase guarantees the maintenance of the advancements achieved throughout the DMAIC technique, therefore increasing the long-term prosperity of the call center operations. Sustaining the gains realized throughout the Lean DMAIC process requires a Control Plan. It describes the specific steps, roles, and oversight procedures to guarantee continued effectiveness. A sample control plan in table style is shown in Table 6.

Table 6
Control Plan Against Improvements

CONTROL PLAN					
No.	Control Parameter	Concerned Department	Frequency of Review	Monitoring Metric	Action Plan for Deviations
1	Regular Training Sessions for Call Agents	Training Department	Monthly	Agent and Issue Resolution Metrics	Reinforce training, conduct refresher courses if needed
2	Reviewing call routing and escalation procedures on a regular basis	Operations Team	Bi-Weekly	Average Wait Time, Call Flow Metrics	Adjust routing algorithms, optimize escalation procedures
3	Continuous Monitoring of Real-Time Call Analytics	IT Department	Daily	Real-Time Analytics Dashboard	Immediate response to anomalies, address technical issues
4	Ongoing Performance Metric Monitoring	Quality Assurance	Weekly	Performance Scorecards, Customer Satisfaction Surveys	Conduct root cause analysis, implement corrective actions
5	Automated Customer Callback System	Technology Team	Monthly	Abandoned Call Rate, Customer Feedback	Optimized callback algorithms, address technical issues
6	Examination of Regular Channels of Communication	Communication Team	Be-Weekly	Customer Feedback, Communication Channel Metrics	Adjust channels based on customer preferences
7	Gemba Walks as a Means of Ongoing Process Monitoring	Improvement Team	Quarterly	Direct Observation, Gemba Walk Reports	Immediate corrective actions, update Lean Improvement Plan

Each measure in this control plan has a reference number, and data about it includes the particular control measure, the department or party

in charge, the frequency of review, the monitoring metric, and the action plan in case of deviations. This strategy makes sure that the call center's gains from the Lean DMAIC process are maintained via continuous monitoring and proactive management. Consistent evaluations and modifications grounded in performance indicators foster an environment that prioritizes ongoing development.

CONCLUSION

In conclusion, the exploration of strategies and innovations to enhance the call center operations at UAGM underscores the critical importance of efficient and effective customer service in the contemporary business landscape. Through methodologies such as DMAIC, Voice of the Customer analysis, Kano Model, and Value Stream Mapping, we have identified key issues such as high call abandonment rates, ineffective communication, and inefficient workflow processes. By addressing these challenges, UAGM can transform its call center into a strategic asset that enhances customer satisfaction, operational efficiency, and overall organizational success.

Recommendation

Based on the findings and analysis, the following recommendations are proposed for UAGM to improve its call center operations:

- Implement targeted training programs for call center agents to enhance communication skills, product knowledge, and problem-solving abilities.
- Integrate advanced technology solutions such as automated call routing and CRM software to streamline call handling processes and reduce wait times.
- Foster a culture of continuous improvement and employee empowerment within the call center team to drive sustainable performance enhancements.
- Prioritize customer-centric strategies and leverage feedback mechanisms to identify and

- address evolving customer needs and expectations.
- Establish robust monitoring and evaluation mechanisms to track key performance indicators and ensure the sustained effectiveness of implemented improvements.

By implementing these recommendations, UAGM can position its call center as a strategic asset that delivers exceptional service to its stakeholders, thereby enhancing its competitive advantage and reputation in the higher education sector.

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