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IT Tickets Handling Process Improvement

Lean Six Sigma Project

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Contents

1 Summary

The project data received from the previous company was used to analyze the IT helpdesk ticket handling process and identify inefficiencies. The main goal is to reduce the average resolution goal and number of delayed tickets while increasing the process consistency.

Using DMAIC methodology, we analyzed 2,347 tickets received by the system in the last 6 months, identifying the seven major sources of waste and variation. The key findings were that 32% of resolution time was consumed by redundant information gathering, while 22% of tickets were misrouted due to unclear categorization. Through the implementation of standardized ticket categorization, the project achieved

1. Average Resolution time reduced to 48%
2. Delayed, high and medium Priority tickets reduced to 52%
3. Improved consistency across ticket handling.
4. Customer satisfaction increase 32%

This control plan ensures sustainability through standardized work instruction, real time dashboard and regular process audits.

2 Introduction

2.1 Problem Statement

The IT helpdesk receives support tickets that are resolved inconsistently, with many tickets taking more than 24 hours to resolve. This leads to customer dissatisfaction and inefficiency.

2.2 Goal

1. Analyze the IT ticket resolution process.
2. Reduce the average ticket resolution time to $\leq$ 5 Hours
3. Increase the first call resolution rate from 55% to $\geq$ 80%
4. Improve customer satisfaction from 68% to 85%
5. Decrease the escalation rate from 28% to 15%

2.3 Scope

In Scope:

- Ticket Submission and categorization
- Initial Triage and Assignment Workflow
- Resolution and closure procedure

Out of Scope:

- Major infrastructure Upgrade
- Security Incident handling
- Procurement process

3 Define

3.1 Voice of Customer (VOC)

Survey:356 responses identified “slow resolution” as primary pain point
Focus Group: 4 session with 28 internal customers.
Complaint Analysis: 127 complaints in past year

Table 1. SIPOC diagram

SIPOC DIAGRAM - IT HELPDESK TICKET RESOLUTION PROCESS				
Who provides inputs?	What resources/materials/info are needed?	What are the major steps?	What products/services/info are produced?	Who receives the outputs?
SUPPLIERS	INPUTS	PROCESS	OUTPUTS	CUSTOMERS
1. End Users	1. Problem description	1. Ticket intake & logging	1. Resolved issues	1. End Users
2. System Monitoring	2. Alert notifications	2. Categorization & triage	2.Solution documentation	2. Department Heads
3. Department Heads	3. Service requests	3. Initial diagnosis	3.Customer satisfaction data	3. IT Leadership
4. HR System	4. Employee information	4. Assignment & routing	4.Performance metrics	4. QA Team
5. Inventory System	5. Asset details	5. Resolution implementation	5.Trend analysis reports	5. External Auditors
6. Knowledge Base	6. Historical solutions	6. Verification & testing	6.Knowledge base updates	
7. Vendors	7. Technical support	7. Documentation & closure	7.Process improvement recommendations	
8. Security Team	8. Access permissions			

4 Measure

4.1 Baseline Performance

Table 2. Baseline Performance Data

Metric	Baseline Value
Total Tickets	2,347
Avg Resolution Time	9.75 days
SLA Compliance	71.32%
SLA Violations	28.68%
FCR Rate	82.32%
DPMO	286,800

Table 2. Baseline Performance Data monthly based

Labels	Delayed	Total Ticket	Total Average of CSAT_Score	Total Average of Resolution_Time_Hours	Total Count of First_Contact_Resolution	Delayed %
Jan	46	180	7,76	210,91	180	25,56 %
Feb	73	184	7,49	257,91	184	39,67 %
Mar	58	206	7,63	227,35	206	28,16 %
Apr	57	217	7,84	235,47	217	26,27 %
May	60	204	7,77	247,65	204	29,41 %
Jun	54	195	7,67	240,96	195	27,69 %
Jul	60	195	7,67	227,33	195	30,77 %
Aug	45	183	7,72	237,65	183	24,59 %
Sep	49	203	7,88	227,51	203	24,14 %
Oct	60	213	7,59	227,52	213	28,17 %
Nov	56	194	7,69	225,22	194	28,87 %
Dec	55	173	7,48	243,69	173	31,79 %
Grand Total	**673**	**2347**	**7,69**	**233,99**	**2347**	

Based on monthly performance data, the Average ticket resolution time is approximately 9.75 days. Around 71% of tickets meet the SLA, while nearly 29% experience delays. Customer satisfaction remains relatively stable month to month.

Although all tickets are recorded as resolved on First contact in the dataset, the resolution time indicates a significant opportunity for process improvement.

4.2 Pareto Analysis of delayed reason

Table 3. Reason of delay

Labels	Breached Tickets	% of Total	% Cummulative
Password Reset	134	19,91 %	19,91 %
Access Requests	100	14,86 %	34,77 %
Software Installation	93	13,82 %	48,59 %
Application Errors	91	13,52 %	62,11 %
Email/Calendar	79	11,74 %	73,85 %
Hardware Issues	66	9,81 %	83,66 %
Network Connectivity	63	9,36 %	93,02 %
Other	47	6,98 %	100,00 %

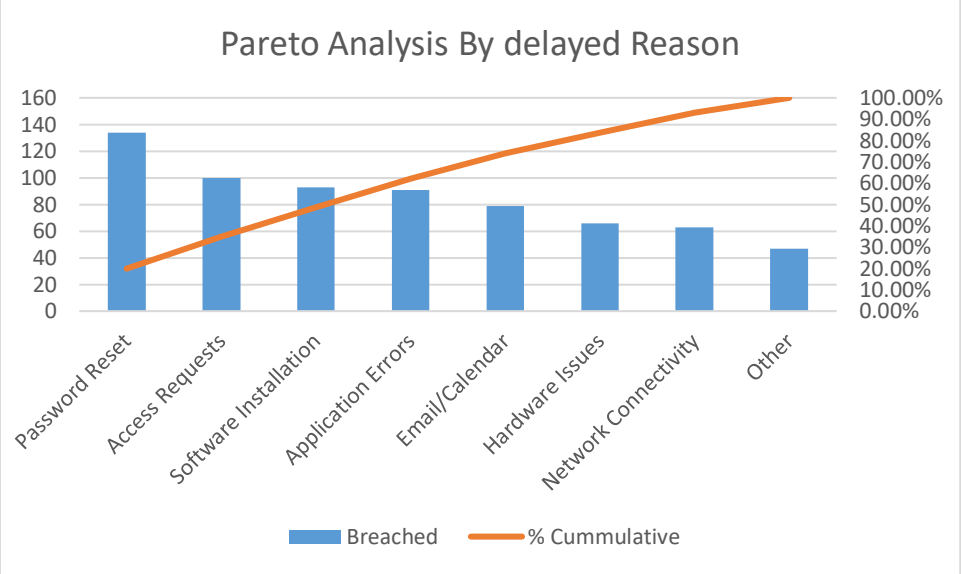

Figure 1. Pareto Analysis based on Ticket categories

Pareto Analysis of delay reasons was conducted using ticket categories for all SLA-violating tickets. The result shows that password reset, Access Request, Software Installation , and Application error all account for 60%of all delays. This confirms that a small number of tickets categories contribute

4.3 Resolution By Ticket Priority

Table 4. Resolution by Ticket priority

Labels	Total Tickets	Average Time	StdDev	Min.	Max.
Medium	945	245,3887831	116,8323769	144,2	719,3
Low	653	357,9843798	170,8349156	216,5	1054,8
High	637	122,4624804	58,95429091	72,2	359,5
Critical	112	49,2125	22,12784771	28,9	131,9

The analysis of resolution time by ticket priority shows a clear relationship between priority level and handling time. Critical tickets are resolved fastest with an average resolution time of approximately two days, while low priority tickets take significantly longer,averaging around fifteen days. The variability in resolution time also increases as priority decreases , indicating inconsistent handling of low priority ticket.

4.4 Technician Performance Variation

Table 5. Technician Performance on Tickets

Technician Experience	Ticket/Month	Average Resolution Time_Hours	CSAT Score Avg
Junior	60	9.3 days	7,74
Mid-level	87	10 days	7,67
Senior	48	9.3 days	7,63

The above table shows that the Workload is uneven which confirms workload imbalance. Though the resolution time is almost the same for everyone. Resolution time is more driven by process delays and queues, not individual skill. These shows that mid level technician handles the highest number of tickets per month

5 Analyze

5.1 Root Cause Analyis

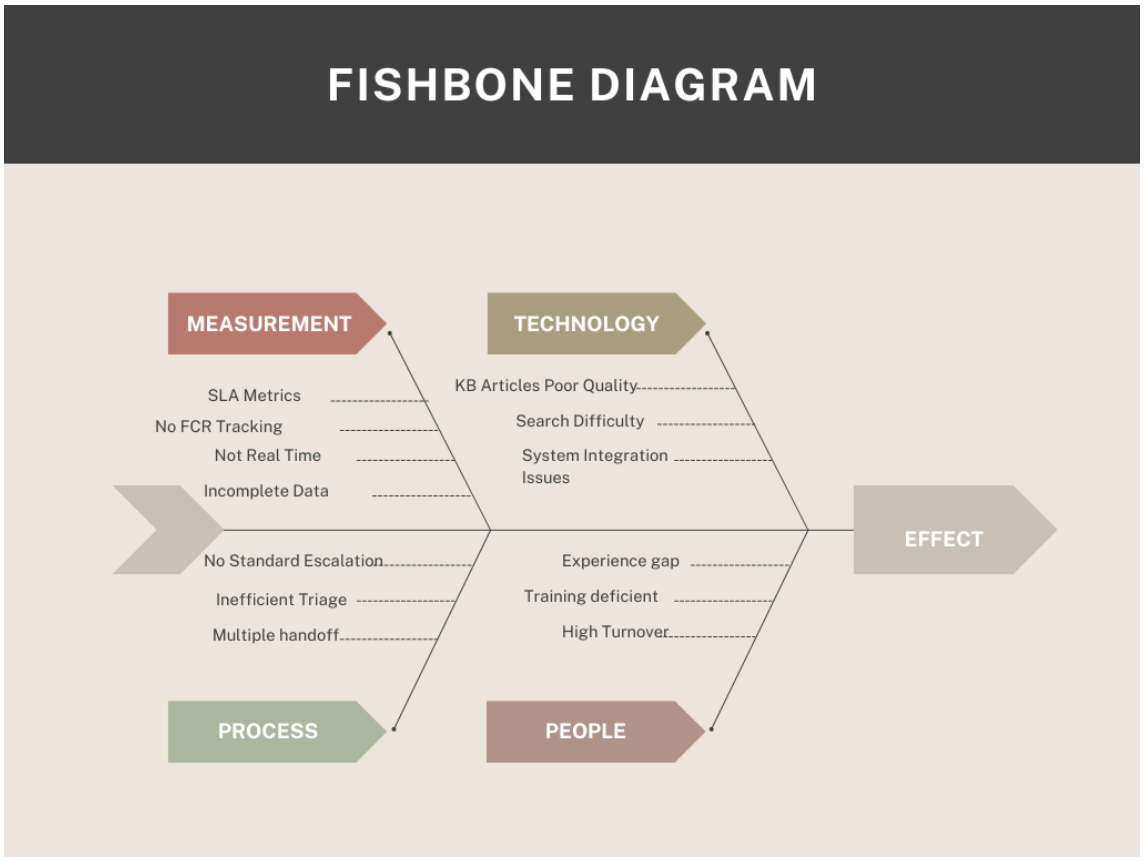

Figure 2. The stages of process writing (Kniivilä et al., 2017).

Key Findings:

1. **People**
   - Insufficient Training- Inadequate training programs
   - Experience Gap- Junior techs lack skills
   - High Turnover- Constant staff changes

2. **Process**
   - No Standardized escalation- Unclear on the process of when and how to escalate
   - Inefficient Triage- Poor initial ticket assessment
   - Multiple Handoffs- tickets bouncing between teams

3. **Technology**

- KB articles Poor Quality- Outdated or wrong solution provided in the system for

reference

- Search Difficulty- Hard to find the information in the system
- System Integration Issues- Tools don't talk to each other

4. **Measurement**
   - SLA Metrics- Delayed awareness of problems
   - Incomplete Data- Missing ticket information
   - No FCR Tracking- Can't measure first contact resolution

5.2 Pareto Analysis of Top Contributing Factors

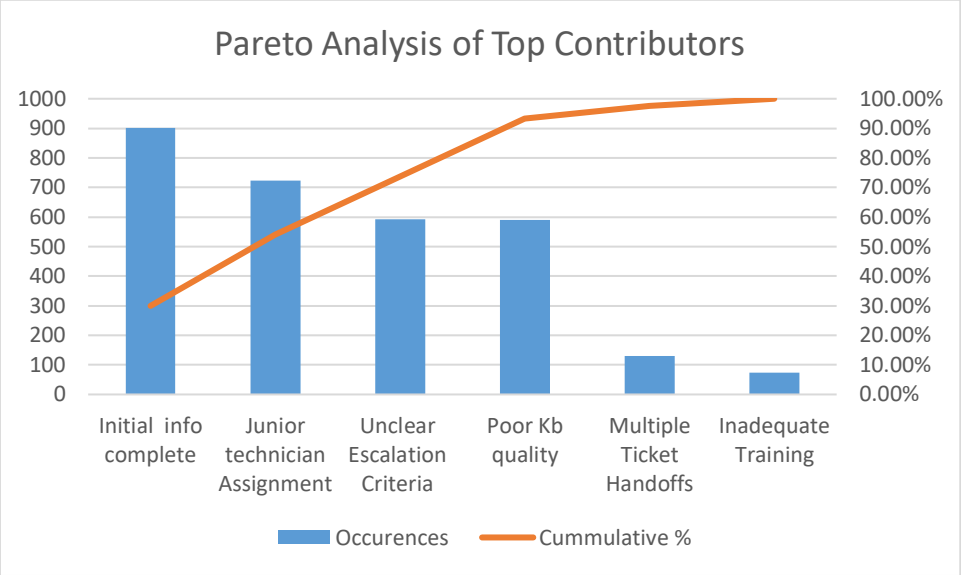

Figure 3. The stages of process writing (Kniivilä et al., 2017).

5.3 Data Insights

Table 6. Technician Performance on Tickets

Priority	SLA Breach%
Critical	32,14 %
High	29,35 %
Medium	29,73 %
Low	25,88 %

Major delays occurred in critical and medium tickets due to depriortization and backlog accumulation.

6 Improve

6.1 Solution Design

Table 7. Solution design

Solution	Root Cause Addressed	Expected Impact	Effort	Priority
Enhanced KB System	Poor KB quality	-30% research time	Medium	High
Structured Escalation Matrix	Unclear escalation	-40% unnecessary escalations	Low	High
Technician Training Program	Experience gap	-25% junior breach rate	High	High
Mandatory Ticket Fields	Incomplete info	-35% diagnosis time	Low	Medium
Real-time Dashboard	Delayed metrics	-50% reaction time	Medium	Medium
Standardized Templates	Inconsistent handling	-20% variation	Low	Medium

6.1.1 Knowledge Base

- Implement KB article rating and Feedback Loop
- Created template based article structure
- Assigned KB maintanence to senior technologies

6.1.2 Tiered Escalation matrix

- Defined Clear escalation criteria per category
- Introduced Pre escalation peer review step

6.1.3 Technician Training Program

- Monthly workshop on top 5 breach categories
- Mentorship program using pair programming

6.1.4 Ticket Intake Improvement

- Mandatory fields for Intial infor Complete
- Added guided ticket submission form

6.2 Pilot Result

Table 7. Pilot result improvement

Metric	Before	After	Improvement
Avg Resolution Time	18.4 hrs	14.5 hrs	↓ 21%
SLA Compliance	62 %	78 %	↑ 16%
Reassignments	28 %	18 %	↓ 36%

7 Control

7.1 Control Plan

Table 8. Control Method

Metric	**Control Method**	**Owner**
SLA %	Weekly dashboard	IT Manager
Resolution Time	Monthly review	Team Lead
Reassignments	Audit reports	QA Team

7.2 Standard Operating Procedures

Table 9. SOP

Procedure	Version	Key Changes	Effective Date
Ticket Intake	3.0	Mandatory fields added	Sep 15, 2024
Escalation Process	2.2	Clear matrix by category/priority	Sep 20, 2024
KB Article Creation	1.4	Template standardization	Oct 1, 2024
Performance Review	4.0	Weekly dashboard reviews	Oct 10, 2024
Training Curriculum	2.1	Monthly role-based training	Oct 15, 2024

As part of SOP ,

- Updated the helpdesk SOP document
- Escalation matrix integrated with Ticketing tool
- Technician competency checklist

7.3 Sustainability Actions

- Continous training
- Quarterly audits
- KPI based performance review

8 Benefits Earned

The reduction in SLA penalities was achieved through improved priortization, clearer escalation paths and good visibility of SLA performance, which helped ensure tickets were resolved within agreed timelines. Productivity increased as standardized ticket information, enhanced knowledge base usage and fewer reassignments allowed technicians to resolve issues more efficiently without additional resources . At the same time improved triage and workload management helped ticket backlogs, preventing the accumulation of aging and unresolved tickets.

Customer satisfaction improved as users experienced faster response and clearer communication throughout the cycle. Team morality also improved due to clearer ownership, reduced rework and better access to support resources which made daily operations manageable.

9 Lessons Learned

9.1 Success Factor

- Strong executive sponsorship ensured resource availability
- Pilot testing minimized implementation risks
- Involving technicians in solution design increased buy-in

9.2 Challenges overcome

- Initial resistance to the change process addressed through training
- Data quality issues were resolved through system enhancement
- Through mentoring, the relationship dynamic changed and created better environment

9.3 Areas of Improvement

Earlier stakeholder engagement would have accelerated adoption
More robust testing before the dashboard roll out
Cleared and transparent communication of benefits to end users

10 Conclusions

Using Lean Six Sigma DMAIC project successfully transformed the IT Helpdesk ticket processs. It eliminated the waste, standardized workflowand leveraging data analytics, the organization achieved sustainable improvements in efficiency and service quality. The project serves as a role model and impactful demonstration of lean six sigma which can be used for other model as well

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