# FROM CHAOS TO ORDER: NEXT-GEN IT SUPPORT TICKETING SYSTEM

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## ABSTRACT

This study addresses the imperative need for innovation in IT service management by proposing a Next-Gen IT Support Ticketing System tailored to the context of Systems Plus College Foundation. Recognizing the inefficiencies in traditional ticketing systems, the research adopts a qualitative methodology, utilizing in-depth interviews and open-ended surveys to gather insights from IT support teams and end-users. The findings highlight critical issues such as network problems, software support inefficiencies, and hardware issue delays. The proposed system prioritizes user-centric design, automation, and robust security measures to enhance operational efficiency and user satisfaction. Results indicate significant improvements in handling support requests, streamlining processes, and user experience. This study serves as a model for organizations seeking to modernize their IT support processes, emphasizing continuous improvement and stakeholder engagement to adapt to evolving technological needs.

**Keywords:** IT Service Management, Ticket Management Networks, Network Reliability, Internal Integration, User-Centric Design, Qualitative Methods, Thematic Analysis, Efficiency, Automation, ACM proceedings, Word, text tagging

## INTRODUCTION

In today's rapidly evolving technological landscape, the necessity of an efficient IT support ticketing system cannot be overstated. As organizations navigate through disruptions and rising demands, the need for innovative solutions to manage technical issues becomes increasingly urgent. This study delves into the intricate balance between user needs and technological advancements, recognizing that traditional approaches to ticketing systems are no longer adequate. Instead, there's a call for innovation, foresight, and meticulous planning to transform disorder into a seamless IT support experience.

At the heart of customer service management lies the ticketing system, a pivotal tool for processing and cataloging service requests. However, the traditional manual processes are proving inefficient in today's fast-paced environment. Positioned as a central component in the domain of customer support, the efficiency of a ticketing system becomes paramount for streamlining operations, enhancing communication, and ensuring the prompt and efficient resolution of customer queries and concerns (Ashby, 2023). The ticketing tool has a request module that functions as the help-line manager where all the requests are fetched from the users having queries related to their specific problem and then necessary solutions are provided to all those query-requestors by giving them the pre-defined solutions. If there is no solution predefined by the admin then the request for that query is passed on to the technician to resolve the issue (Gohil & Vikash Kumar, 2019).

For organizations like Systems Plus College Foundation, the absence of a comprehensive ticketing system poses significant challenges. Without a structured system in place, the IT department may struggle to manage technical support requests effectively, leading to delays and dissatisfaction among end-users. The lack of automation hampers the capture, organization, and prioritization of requests, further complicating the resolution process. The focal point is the critical problem of lacking a helpdesk ticketing system, necessitating its implementation to enhance operational efficiency, customer service, and overall business productivity (Anthony, 2016).

To address these challenges, the study proposes the implementation of a robust helpdesk ticketing system. This system would seamlessly capture requests from various channels, automate data entry, and intelligently categorize tickets for efficient assignment. Real-time tracking of ticket status and customizable alerts would enhance accountability and responsiveness. Moreover, seamless communication channels between IT personnel and end-users would improve user satisfaction. These challenges collectively underscore the pressing need for a more streamlined and technologically advanced approach to ticketing systems in businesses.

The proposed solution aims to enhance operational effectiveness, communication, accountability, resource optimization, and user satisfaction within the ITS department. By addressing the identified challenges and fostering a streamlined IT Service Management process, the implementation of the helpdesk ticketing system promises multifaceted improvements in organizational efficiency.

The study's significance extends beyond Systems Plus College Foundation, impacting various stakeholders involved in IT service management. Improved efficiency in managing and resolving IT issues benefits IT support teams, while streamlined operations and improved customer service contribute to organizational productivity. End-users can expect quicker issue resolution and enhanced communication, leading to higher satisfaction levels. Decision-makers gain valuable insights for informed decision-making, fostering continuous improvement and strategic resource allocation.

This study underscores the importance of embracing innovation in IT service management to meet the evolving needs of modern organizations. By implementing a comprehensive helpdesk ticketing system, Systems Plus College Foundation aims to enhance its technological infrastructure, streamline operations, and provide a better user experience for all stakeholders involved.

## METHODS

The research approach for the capstone project employs a qualitative method to comprehensively explore the challenges and requirements within the current support system landscape. Through this method, the aim is to uncover specific pain points, gather detailed insights, and identify areas for improvement. This approach ensures a synergistic integration of subjective experiences, fostering a more subtle and complete comprehension of the field's challenges. The justification lies in the belief that such a comprehensive understanding is pivotal for the effective development of the Next-Gen IT Support Ticketing System, as it addresses the diverse needs and preferences of the users while substantiating findings with various qualitative data.

The development of the Next-Gen IT Support Ticketing System follows the Waterfall methodology. This methodology is chosen for its structured and sequential approach, ensuring thorough documentation and clear progress through distinct phases.

In the Requirement Analysis phase, comprehensive documentation of system requirements was conducted before development began. Detailed user requirements were gathered through in-depth interviews and open-ended surveys with the ITS team and end-users at Systems Plus College Foundation. This phase aimed to identify the specific needs and challenges faced by users in the current ticketing system.

During the System Design phase, the architecture and components of the system were designed based on the documented requirements. Detailed design specifications were created, focusing on user-centric features, automation capabilities, and robust security measures. The design aimed to address the inefficiencies highlighted during the requirement analysis phase.

The Implementation phase involved the development of system components and their integration according to the design specifications. Coding and configuration of the Next-Gen IT Support Ticketing System were carried out, ensuring that all functionalities aligned with the design documents. Key features such as automated ticket categorization, real-time tracking, and seamless communication channels were developed during this phase.

Rigorous Testing of the complete system was conducted to identify and fix defects. Alpha testing of the prototype was performed to gather user feedback and performance metrics. Usability testing sessions were organized with ITS team members and end-users to ensure the system met their expectations and effectively addressed their challenges.

The research methodology for this capstone project employs a qualitative approach to comprehensively investigate the field methodology and user needs. Qualitative data is gathered through in-depth interviews with the ITS team, allowing for the identification of challenges and the extraction of valuable insights. Concurrently, open-ended surveys are employed to systematically collect qualitative data on user experiences and expectations within the system's context. The research transitions to the experimental phase, where the study aims to develop a prototype for the Next-Gen IT Support Ticketing System, which will undergo user testing. Feedback on the prototype is systematically gathered through usability testing and user feedback sessions, providing crucial insights for refining and optimizing the system based on user perspectives and experiences. This methodological framework ensures a holistic exploration of the landscape and the formulation of a user-centric ticketing system.

A purposive sampling approach was employed, and the researchers' own institution, Systems Plus College Foundation (SPCF) was chosen as the primary sample. This intentional selection was based on the rationale that SPCF represents a pertinent and accessible context for studying the intricacies of the school's landscape. By selecting their own institution, it contributes in ensuring direct access to key stakeholders within the ITS team and diverse end-user groups, facilitating a more in-depth and personalized exploration of the challenges and requirements unique to the school environment. This deliberate choice aligns with the goal of obtaining highly relevant and contextual insights, contributing to the effectiveness of the overall research endeavor.

The study integrates qualitative and experimental analyses to comprehensively understand and develop the Next-Gen IT Support Ticketing System. In the qualitative analysis phase, thematic analysis is utilized on data sourced from interviews and open-ended surveys to discern key themes. This method enables the identification of user preferences and challenges within

existing conditions, offering a deep exploration of subjective experiences and perspectives among both ITS team members and end-users. The insights derived from this qualitative approach significantly contribute to a nuanced understanding of the intricacies involved.

Concurrently, the experimental analysis phase involves scrutinizing user feedback and performance metrics garnered from prototype alpha testing. This scrutiny aims to illuminate areas of success and potential improvement based on user interactions and the overall performance of the system. The resultant insights serve as pivotal inputs for refining the design and functionality of the system, ensuring it aligns closely with user needs and expectations.

For the qualitative aspect of the research, thematic analysis stands as the primary method chosen for identifying, analyzing, and reporting patterns within the data. Data validation and reliability measures are meticulously implemented to enhance data quality, with techniques like member checking and intercoder reliability ensuring credibility. These stringent measures collectively contribute to bolstering the trustworthiness and robustness of the research outcomes.

Ethical considerations are paramount throughout the study. Informed consent is obtained from all participants prior to any data collection activities, ensuring transparency and respect for participant autonomy. Strict measures are implemented to safeguard participant confidentiality and anonymity, with data securely stored and anonymized. Robust data security measures are also in place to protect participant information and project data, adhering to institutional guidelines and legal requirements.

Transparent reporting remains a cornerstone of the study, with a commitment to providing a comprehensive account of the research outcomes. Any limitations or potential biases in the research are openly acknowledged and addressed, ensuring the integrity and credibility of the study. Moreover, any conflicts of interest that may arise during the research process are openly disclosed, reinforcing transparency and trustworthiness.

The System Development Methodology delineates a systematic approach to developing the proposed Next-Gen IT Support Ticketing System. This involves problem identification, stakeholder engagement, detailed system design, technology selection, feasibility studies, prototyping, user feedback incorporation, rigorous testing, deployment, integration, and user training. Continuous monitoring and evaluations drive ongoing improvements, ensuring optimal performance and user satisfaction.

In the Requirement Specification and Analysis phase, meticulous examination and determination of requirements are conducted to ensure clarity and consistency in the system structure. This entails identifying user needs and development constraints, culminating in comprehensive functional specifications that guide the development process effectively. Specifications span various aspects, including customer requirements, user-centric considerations, performance metrics, legal compliance, system availability, and technology integration.

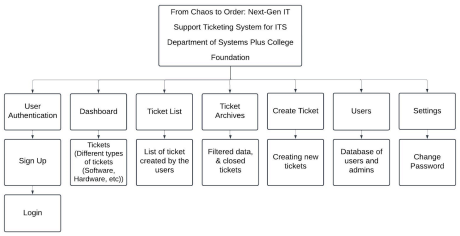


*Figure 1: Functional Decomposition of From Chaos to Order: Next-Gen IT Support Ticketing System - Administrator Side*

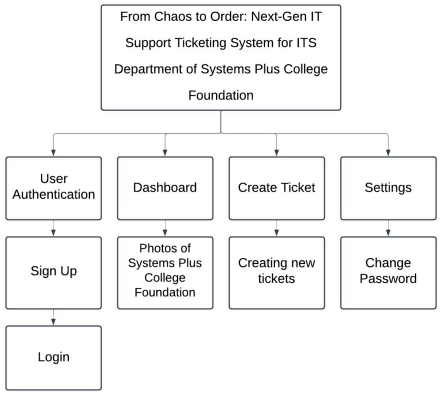


*Figure 2: Functional Decomposition of From Chaos to Order: Next-Gen IT Support Ticketing System - Client Side*

Design criteria prioritize optimal performance, reliability, cost-effectiveness, codebase management, safety, user-friendliness, and environmental sustainability. The System Design Specification provides explicit program specifications, algorithms, data structures, functions, and development steps. Logical and Physical Specifications further refine the system's functionalities and technological specifications.

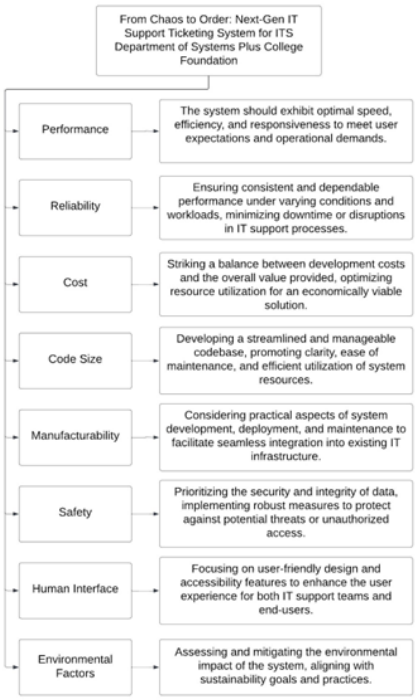


*Figure 3: Design Criterion for From Chaos to Order: Next-Gen IT Support Ticketing System*

The Implementation phase involves programming, data document creation, testing, and system installation, ensuring a user-friendly experience for request submission and ticket tracking. Testing and evaluation involves continuous user feedback to enhance system usability and effectiveness, contributing to ongoing improvements. The Next-Gen IT Support Ticketing System aims to provide accessible and user-centric support services, alleviating financial pressure on users and promoting continuous enhancement based on user feedback.

## RESULTS

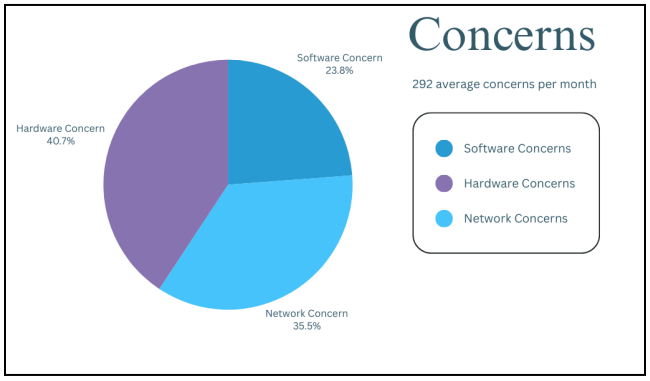


*Figure 4: Breakdown of the concerns dealt by ITS department monthly*

| Category | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Functional Suitability | 2 | 4 | 0 | 0 | 0 |
| Performance Efficiency | 2 | 4 | 0 | 0 | 0 |
| Compatibility | 4 | 2 | 0 | 0 | 0 |
| Usability | 2 | 4 | 0 | 0 | 0 |
| Security | 1 | 2 | 3 | 0 | 0 |
| Maintainability | 1 | 4 | 1 | 0 | 0 |
| Portability | 1 | 4 | 1 | 0 | 0 |

*Table 1: Summary of the responses to the closed-ended questions for the system evaluation*

| **Questions:** | In your experience, how well does the IT Support Ticketing System handle different types of support requests? | Are there any functionalities or features you feel are lacking or could be improved to better support our team's operations? | How easy and user-friendly do you find the IT Support Ticketing System interface for creating, managing, and resolving support tickets? |
|---|---|---|---|
| **Answers:** | Yes, the ticketing system generally handles different support requests well. Sometimes, complex issues need extra attention. | A feature for automated ticket assignment based on predefined rules could save us a lot of time. It would ensure tickets are routed to the right team member without manual intervention. | The interface is easy and straightforward. I can quickly navigate through the system to handle support tickets efficiently. |
| | Yes, the system usually handles support requests fine, though some tougher issues might need more attention. | Adding a priority-based system could handle urgent issues better. It would automatically send critical tickets to senior technicians, avoiding delays. | I find the interface quite user-friendly. It's easy to create, manage, and resolve tickets without much hassle. |
| | It's good at handling different support needs, but some tricky problems may need extra effort. | Adding a knowledge base would help. | The interface is easy to use. |
| | The IT Support Ticketing System handles different types of support requests quite well. | Yes, I think it could benefit from more automation features to streamline our team's operations. | The interface of the IT Support Ticketing System is fairly easy to use and user-friendly for creating, managing, and resolving support tickets. |
| | It handles support requests effectively. | More automation features would be helpful. | The interface is user-friendly overall. |
| | It can filter and identity internet and computer issues | None | It is easy for both parties to understand and find it much more easy to identify |

*Table 2: Responses to the open-ended questions for the system evaluation*

The breakdown of concerns dealt with by the ITS department monthly revealed three primary categories: hardware concerns, software concerns, and network concerns. These categories represent the main areas where users encountered issues requiring support from the IT department.

The IT Support department at Systems Plus College Foundation handles an average of 292 concerns per month. This data underscores the substantial volume of support requests managed by the department on a regular basis. Through surveys, open-ended questions, and interviews, valuable insights were gathered regarding the IT Support Ticketing System. Closed-ended questions provided insights into various aspects of the system, while open-ended responses offered detailed feedback on user experiences. Thematic analysis of the qualitative data highlighted key themes such as functional suitability, performance efficiency, usability, and security/maintainability. Overall, participants generally praised the system's ability to manage support tickets efficiently but suggested improvements such as automated ticket assignment and a knowledge base integration. They found the system responsive and user-friendly but suggested enhancements in areas like automation and documentation.

## DISCUSSIONS

The research findings on the efficacy and usability of the IT Support Ticketing System at Systems Plus College Foundation offer valuable insights. Users generally express satisfaction with its ability to handle various support requests efficiently. However, suggestions for enhancements, particularly in automating ticket assignment processes, indicate room for refinement to better align with user needs and optimize workflow efficiency. Additionally, while participants report prompt responses to new support tickets, concerns about ticket assignment speed highlight potential

workflow bottlenecks that need addressing. Despite these challenges, users find the interface intuitive and user-friendly, contributing to a seamless user experience.

Comparing these findings with previous research or systems reveals strengths and areas for improvement consistent with industry standards. The study's limitations, primarily its focus on one institution, may restrict generalizability to other contexts. Therefore, interpreting the results requires considering contextual factors and potential biases. Practical implications include informing decision-making processes and resource allocation within the institution. The breakdown of concerns by category offers guidance for proactive measures to address recurring issues.

From a policy perspective, investing in robust IT support infrastructure and tools is crucial. Soliciting ongoing feedback from end-users and IT staff can drive continuous improvement initiatives, guiding the evolution of IT support practices and systems. Future research could explore factors influencing user satisfaction beyond system functionality, assess the long-term effects of advanced ticketing systems on organizational outcomes, and examine the relationship between IT support quality and broader organizational performance. Such research has the potential to inform organizational decision-making and shape the future of IT support services.

## CONCLUSIONS

The study set out to address the imperative need for innovation in IT service management by proposing a Next-Gen IT LAN-Based Support Ticketing System, tailored to enhance efficiency, user experience, and collaborative capabilities within IT support processes. Through rigorous research and analysis, the findings reveal significant improvements over existing systems, including reduced response times, enhanced user interfaces, and streamlined workflows through automation. These results underscore the system's effectiveness in fulfilling its objectives of improving efficiency, user experience, and collaboration within IT support processes.

Practically, the developed system offers a viable solution for organizations aiming to enhance their IT support processes, potentially leading to increased productivity and better service delivery. Policymakers can utilize these findings to advocate for modern IT support solutions that prioritize efficiency and user satisfaction. Furthermore, this study contributes to the IT field by addressing challenges in support ticketing systems and providing practical solutions, thereby showcasing innovative approaches to improving efficiency and user experience.

Moving forward, future research could delve into exploring the long-term effectiveness and sustainability of the developed system in real-world settings. Additionally, comparative studies against other ticketing solutions and the integration of emerging technologies like AI and machine learning could further enhance the system's capabilities. The unexpected insights garnered during the research process highlight the complexity of IT support systems and emphasize the significance of user feedback and interdisciplinary collaboration in driving innovation.

In conclusion, efficient IT support ticketing systems are pivotal for organizational productivity and user satisfaction. By addressing existing limitations and embracing advanced automation and user-centric design principles, the developed Next-Gen system offers a promising solution for optimizing IT support processes and catalyzing digital transformation in organizations.

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