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CUSTOMER SUPPORT PROCESS PROBLEMS AND THEIR ALL-IN-ONE RESOLUTION

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Анотація. У цій статті розглядаються важливі аспекти вдосконалення систем підтримки клієнтів з метою їх упорядкування шляхом інтеграції передових обчислювальних методів і автоматизації. Ефективне використання обчислювальних систем у різних галузях, таких як наука, бізнес і техніка, значною мірою залежить від високоякісних даних і складної обробки. Чітко організовані дані та чітко визначені завдання є важливими для підвищення ефективності системи підтримки клієнтів. В дослідженні підкреслюється, що поточні впровадження часто не охоплюють повний спектр сценаріїв. Ефективне використання інструментів для динамічного управління робочим навантаженням та перевірки даних у режимі реального часу створює значні труднощі. Необхідні інтегровані рішення для обробки всього життєвого циклу запитів на підтримку клієнтів – від збору даних до розподілу завдань і, нарешті, до управління навичками агентів на основі відгуків клієнтів. Цілісний підхід з використанням штучного інтелекту та машинного навчання може покращити управління завданнями в підтримці клієнтів, що призведе до кращої якості даних, ефективного розподілу завдань та підвищення продуктивності агентів.
Ключові слова: процес підтримки клієнтів, операції підтримки клієнтів
Abstract. This paper examines the critical aspects of enhancing Customer Support Systems with an aim to have them sorted out by integrating advanced computational techniques and automation. Efficient use of computational Systems across various fields, such as science, business, and engineering, relies heavily on high-quality data and sophisticated processing. Clearly organized data and well-defined tasks are essential for maximizing Customer Support System effectiveness. The study highlights that current implementations often fail to cover end-to-end scenarios comprehensively. Effective use of tools for dynamic workload management and real-time data validation presents significant challenges. Integrated solutions are needed to handle the entire lifecycle of customer support requests - from data gathering to task allocation, and finally, to managing agents' skills based on customer reviews. A holistic approach using AI and machine learning can improve task management in customer support, resulting in better data quality, efficient task distribution, and enhanced agent performance.
Key words: customer support process, customer support operations

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INTRODUCTION

Have your Customers ever experienced frustrating delays? Waiting hours or even days for someone to get back to them when they faced a technical issue, making a reservation, or submitting a service complaint? While such delays might be tolerable for minor issues, they can be disastrous in more severe cases.

Unresolved and/or even unanswered problems can lead to widespread social media complaints, hazards could result in injuries, and poor service might drive Customers to switch to competitors. The consequences can be significant, as seen in the case of Fisker, where delayed responses to Customer's concerns led to reputational damage and stock share price declines from $0.73 to $0.0023 which is an insane 99.69% decline [InsideEVs, Reuters].

Delays in Customer Support are often caused by the lack of efficient processes and necessary automations within Companies processes. When multiple Agents must transfer requests from one to another, trying to find someone who actually understands the issue, it creates a frustrating experience for the Customers who are left on their own. For instance, popular online Sales Platform Support suggests that they will be able to get back in touch after an unsuccessful payment complaint in around 48h as visible on the figure 1, attached below.

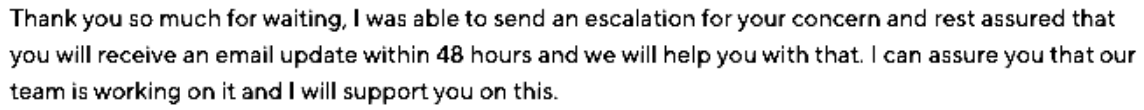

Figure 1 – Complaint escalation request

The lack of automation not only prolongs response times but also increases the likelihood of errors and miscommunication, further contributing to the problem, and potential revenue losses.

The paper "Priority-Based Scheduling Algorithm for Help Desk Support System" explains how priority-based scheduling algorithms improve task allocation by dynamically prioritizing support tickets based on urgency and complexity. This ensures that high-priority issues are handled by the most suitable agents, maximizing resource utilization and improving service efficiency [IJISAE].

At the same time, it's important to acknowledge that sometimes Customer requests are vague and not clearly described, making it difficult for Support Teams to address the issues effectively. Customers may struggle to articulate their problems, especially when they don't know what information is relevant. This lack of clarity leads to even more frustration for both, Customers who are waiting for a solution and Support Agents who are struggling figuring out what's going on [Dynamic Business].

Also, clear guidelines and objectives ensure coherent and focused data collection efforts, which are crucial for accurately assessing educational quality and learning outcomes. For instance, clear task definitions facilitated better coordination among stakeholders, enhancing the effectiveness of data integration into policy-making processes [UNESCO IIEP Learning Portal].

Quality problem may be modeled by considering the quality of task descriptions *(TDQ)* as a variable that affects task resolution time and accuracy:

$$TDQ = f(TD),$$

where TD represents task description, and f is a function that evaluates their clarity and completeness.

Impact on the task resolution time (TRT) and accuracy (A) may be modeled using functions below:

$$TRT = g(TDQ),$$
$$A = h(TDQ),$$

where g and h are functions which describe how the task description quality affects resolution time and accuracy.

Ensuring that high-quality data is gathered is a prerequisite for any kind of automation in Customer Support. Automation relies on accurate and complete data to function effectively, whether it's for routing tasks to the appropriate Agents, providing relevant information to Customers via chatbots, or analyzing trends to predict and resolve issues proactively. Without quality data, automated systems may make incorrect decisions, leading to inefficiencies and Customer dissatisfaction. Therefore, addressing the root causes of data quality issues is essential for the successful implementation of automated Solutions in Customer Support.

But is there really a need to reach out to a Support Team for every issue? Perhaps some problems could be resolved by customers themselves by following simple instructions or knowledge articles. For instance, when a device displays an error code, the solution might be as simple as connecting a charging adapter or performing basic maintenance. In such cases, waiting for a support agent not only frustrates the Customer but also ties up valuable Company resources.

A potential resolution of the above challenge is the implementation of robust Self-Service options that empower Customers to solve straightforward issues on their own. By offering tools like Chatbots, Knowledge Bases, or Online forms where Customers can be guided which information to enter while searching for solutions, Companies can significantly reduce the demand on their Support Teams. These self-service tools can instantly deliver the necessary information, guiding customers through the steps to resolve their issues without needing Agent intervention [Help Scout].

Summarizing above, it is clear that in any Customer Support environment, challenges and issues are inevitable. Whether it's due to vague customer requests, delays in response times, or the sheer complexity of certain problems, no System is perfect. Given this landscape, a well-defined, all-in-one process is essential. Such a process should streamline the issues resolution, whether they are handled by Customers independently or require the expertise of a Support Agent.

Also, it becomes obvious that there are struggles of defining and implementing one because if it would not be a case, then there would be happy Customers only!

CUSTOMER SUPPORT TOOLS OVERVIEW

With a clear understanding of the key challenges in Customer Support (various delays, vague requests, and the lack of Self-Service options) it is now time to explore the tools and platforms available to address them.

The question we must ask ourselves is: Are there solutions flexible enough to implement even the most complex customer support processes and meet the highest demands? To find out the answer, let's do some research of what we are offered.

At first glance, it may seem that a variety of tools, such as CRM systems, chatbots, and AI, can be utilized to implement Customer Support processes effectively, potentially creating a comprehensive Solution. However, while using these standalone instruments might work well initially, the challenge arises when trying to integrate them into a seamless, unified System. As the complexity of the Customer Support process grows, so does the difficulty of ensuring that these disparate tools work together harmoniously. For instance, combining a CRM with separate AI-driven Chatbots and data validation instruments can lead to issues with data synchronization, workflow management, and user experience consistency.

For instance, one of the major issues is the heterogeneity of Systems and data formats, which can create compatibility problems. Different tools often have unique architectures and data storage methods, making it difficult to achieve a smooth integration. This complexity can lead to increased costs, longer development times, and a higher likelihood of errors during the integration process [Connecting Software].

Additionally, maintaining consistent performance and scalability becomes more challenging as you integrate multiple tools. As your Business grows, the integration infrastructure may struggle to handle the increased workload, leading to slow data processing and reduced efficiency. This problem is extended by the need to maintain Security and Compliance across disparate Systems, each with its own set of vulnerabilities and regulatory requirements [Connecting Software].

Table 1

Popular Platforms that implement Customer Support processes

		Platform		
		Zendesk	**Freshdesk**	**Salesforce**
FEATURE	**Ticketing System**	Comprehensive	Comprehensive	Comprehensive
	Data Gathering	Limited integration with advanced tools	Limited integration with advanced tools	Robust integration with Salesforce ecosystem
	Agent Skills Management	Basic	Basic	Advanced, with customizable workflows
	Dynamic Workload Management	Basic	Moderate	Advanced, with AI-driven insights
	Real-time Data Validation	Limited	Limited	Extensive, integrated with Einstein AI
	Scalability	High	High	Very High

And, as a cherry on top of a pie, having a ton of integrations often results in what is known as a "spaghetti" architecture, where numerous point-to-point connections create a web of dependencies. This makes it difficult to troubleshoot issues, increasing the overall maintenance efforts [ONEiO].

Rather than relying on patching and fixing standalone tools, it becomes essential to evaluate Platforms that offer fully integrated solutions. Platforms that can handle end-to-end scenarios, manage dynamic workloads effectively, and provide real-time data validation without the need for extensive customizations or integrations.

By focusing on platform-based solutions, we can better ensure that the Customer Support processes are not only comprehensive but also scalable and adaptable to evolving needs. Let's move forward with a comparison of these platforms to see which ones truly meet the demands of modern customer support, available at table 1.

SOLUTION DESIGN

In order to implement all in one solution, a customizable platform needs to be selected. Based on the platforms' comparison result briefly highlighted in table 1, Salesforce CRM turns out to be the one which suits needs the most.

Understanding the platform's features and limitations, especially what is related to Service Cloud, database schema extension shown on figure 2 was designed.

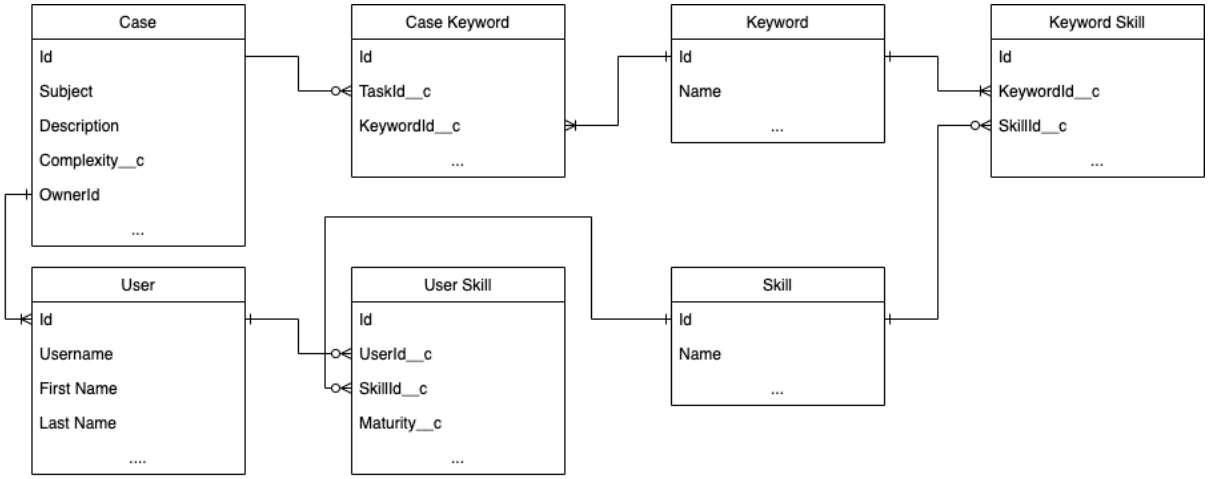

Figure 1 – Complaint escalation request

Above structure may facilitate the automatic and efficient assignment of tasks based on agent skills and task requirements.

From the process perspective, the workflow begins when a Customer reports an issue. The System collects detailed information about the issue from the customer, ensuring that all relevant data is captured accurately. The platform then performs a knowledge search to find potential solutions from the existing knowledge base. If a solution is found, it is suggested to the customer through relevant knowledge articles.

If the initial search does not yield a Solution, the platform saves the issue details and escalates the matter to an AI/ML service for further analysis. The AI/ML service, using a pre-trained model, analyzes the issue details thoroughly. The results of this analysis, including keywords and severity levels, are used to update the issue submission with the necessary skills required to address it.

Next, the updated issue is matched with available agents whose skills align with the identified requirements. The selected agent is notified about the new task assignment. The agent then processes the submission, communicating with the customer to provide updates and work towards resolving the issue.

If the issue is resolved, the agent confirms the resolution and requests feedback from the customer. If the issue is not resolved, the agent continues to assist the customer as needed. The customer is then asked to fill out a feedback form, providing valuable input on the resolution process.

The feedback is analyzed using the pre-trained model to assess customer satisfaction and the speed of resolution. Based on this analysis, the agent's skill level is adjusted accordingly. The supervisor is notified of any changes in agent skills, ensuring continuous improvement and better alignment of agent capabilities with future support requests.

This structured workflow not only ensures efficient issue resolution but also continuously improves the system's effectiveness through feedback and AI-driven insights.

Described above transaction in detail is visible on figure 3.

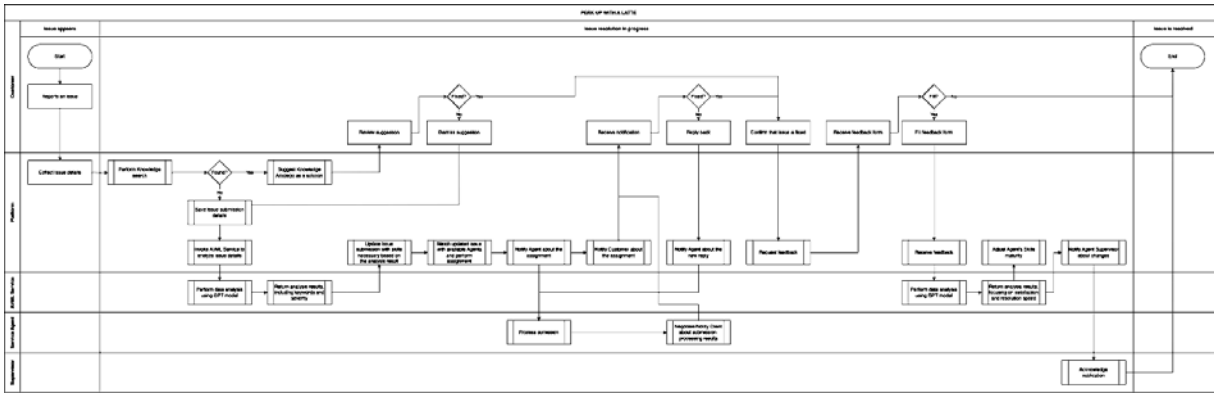

Figure 3 – All-in-one Customer Support Process

Such an approach addresses the problem of unclear task descriptions by using AI to analyze given information, keywords to provide additional context and categorization. It also handles inefficient task assignment by leveraging a detailed mapping of user skills to task requirements, ensuring that tasks are distributed based on agent capabilities using Salesforce CRM capabilities.

SOLUTION IMPACT

To get an understanding of the Solution impact of implementing this comprehensive Customer Support workflow, it's crucial to evaluate both its benefits and drawbacks.

Benefits:

1. Customer-centric approach from start to finish. The Workflow is designed to prioritize the Customer experience, ensuring that their complaints are addressed promptly and effectively, and that their feedback is used to continually refine the Support process.
2. Comprehensive automation across stages. Automating various stages of the Support process reduces the manual workload on Agents, speeds up response times, and ensures consistency in handling issues. This helps to streamline operations and improve overall efficiency.
3. AI/ML integration enhances accuracy. Using AI/ML models like GPT for issues analysis and task allocation ensures that the process is data-driven and precise, which leads to more accurate problem-solving and better resource utilization.
4. Dynamic task allocation improves efficiency. Real-time matching of issues with agents based on their skills ensures that tasks are handled by the most qualified personnel, leading to quicker and more effective resolutions.
5. Continuous improvement through feedback loops. Collecting and analyzing customer feedback allows for ongoing improvements in the system. Adjustments to agent skills and updates to the knowledge base based on feedback ensure the support process remains effective and up-to-date.

Drawbacks:

1. Complexity in implementation and maintenance. Integrating multiple automated processes and AI/ML services can be complex and requires significant technical expertise and resources to maintain.
2. Dependency on AI model accuracy. The effectiveness of the system relies heavily on the accuracy of the AI/ML models used. Poor model performance can lead to incorrect task assignments and unsatisfactory solutions.
3. Resource-intensive (computational power and storage). Running AI/ML services and handling large volumes of data can be resource-intensive, requiring substantial computational power and data storage capabilities unless some pre-built solution is used.
4. Over-reliance on automation may impact customer experience. While automation can improve efficiency, it can also lead to a less personalized customer experience if not balanced with human interaction. Customers may sometimes prefer direct human assistance.

5. High initial setup costs. Implementing such a comprehensive system can involve significant initial costs, including purchasing software, integrating AI/ML capabilities, and training staff.

Even though the Solution implementation is currently in progress, we can still refer to some design documentation and publicly-available statistics to share a balanced view, highlighting not only the strengths designed to make the System effective and efficient, but also the challenges that were predicted or have arisen during the implementation [McKinsey & Company, GreenM, Help Scout, HubSpot].

To better understand the implementation impact on the Customer Support process, a detailed comparison of key metrics was made. Analysis results are available in table #2.

Table 2

METRICS

Stage #1 – Complaint Submission			
Phase		**Competitive value**	**Estimated value**
App Research to Find Complaint Submission Form		5-10 minutes	2-5 minutes
Actual Complaint Submission		15 minutes	3-5 minutes
Self-Service		20-30 minutes	15-20 minutes
Stage #2 – Complaint Handling			
Phase	**Base value**	**Competitive value**	**Estimated value**
Complaint Distribution	10-30 minutes	1-2 minutes	2-3 minutes
Complaint Resolution Time	3-5 days	2-3 days	1-2 days
Stage #3 – Feedback Provisioning			
Aspect		**Competitive value**	**Estimated value**
Customer Satisfaction Score		65-75%	80-85%

SUMMARY

The study highlights that current implementations often fail to cover end-to-end scenarios comprehensively. Effective use of tools for dynamic workload management and real-time data validation presents significant challenges. Integrated solutions are needed to handle the entire lifecycle of customer support requests - from data gathering to task allocation, and finally, to managing agents' skills based on customer reviews. A holistic approach using AI and machine learning can improve task management in customer support, resulting in better data quality, efficient task distribution, and enhanced agent performance.

The paper identifies several problems in Customer Support, such as inefficient task allocation, poor data quality, and a lack of Self-Service. Vague and incomplete task descriptions due to Customer knowledge gaps and poorly designed Support forms lead to delays and inefficiencies. Automating task allocation using a comprehensive skill matrix and AI-driven systems can address these issues by matching tasks to the most suitable agents and ensuring balanced workloads. Historical data is crucial for training AI systems to make better decisions, resulting in improved task assignment and overall performance.

The suggested solution involves implementing an all-in-one platform, with Salesforce CRM identified as the most suitable option. The proposed workflow begins with detailed data collection, followed by a knowledge search for potential solutions. If no solution is found or they are not helpful, then the reported issue is escalated to an AI/ML service for analysis. The results inform task assignment, matching issues with agents based on their skills. Agents then process tasks, communicate with customers, and request feedback upon resolution. This workflow addresses issues of unclear task descriptions and inefficient task assignment by using

AI for analysis and detailed skill mapping, ensuring continuous improvement through feedback and AI-driven insights.

The benefits of this comprehensive approach include automation across all stages, enhanced accuracy through AI/ML integration, dynamic task allocation, and a customer-centric workflow. However, the implementation is complex, resource-intensive, and heavily reliant on the accuracy of AI models. Despite these challenges, the proposed solution promises to significantly enhance customer support operations, leading to better data quality, efficient task distribution, and improved agent performance.

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ПРОБЛЕМИ ПРОЦЕСУ ПІДТРИМКИ КЛІЄНТІВ ТА ЇХ КОМПЛЕКСНЕ ВИРІШЕННЯ
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