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Help Desk Support Ticket and Issue Management

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Abstract: IT companies require methodical approaches to handle the growing volume of customer-reported software issues and service requests. An enormous backlog of unresolved issues has the potential to drastically raise software development and maintenance expenses. An IT company therefore need a clearly defined customer support model. It acts as a link between the client and the business from beginning to end. The support industry also used this to track and record any procedures and solutions used to close tickets. With the Helpdesk Ticketing System, you can use an online platform to solve questions in a web-based environment. To ensure seamless and efficient operation, the user can submit tickets for even the smallest questions. Both within the company and remotely, the ticketing tool is usable. which can be accessed by anyone in organization or end user.

Keywords: *helpdesk; ticket; e-mail; virtual; remote.*

1. Introduction: -

The most often utilised tool in the company these days for resolving daily issues is the helpdesk ticketing system. In the past, questions were answered by traditional methods like email, which took a long time and didn't really help. A 25% cost decrease, a 40% increase in customer happiness, and a 31% boost in productivity have all been demonstrated by the Helpdesk Ticketing system [1]. Numerous organisations have found that by using this ticketing system, questions may be answered quickly and effectively, allowing for the fastest possible response. Every business now needs information technology (IT) in order to help enhancing the efficacy and efficiency of its operations [2]. According to Al-Emran and Chalabi (2014), as the information technology sector enters the digital era, a growing number of businesses, educational institutions, and other establishments are looking to IT support for help with a variety of technical issues. These include computer networks, operating systems, internet connections, computer security, and any prospective software or hardware problem [3]. IT Support is essential and plays a vital role in an organization, regardless of the size of your business—small, medium-sized, or large. By protecting the data, resolving problems, and keeping an eye on things, it has an obligation to guarantee that they maintain control over the application or system (Bourne, 2014) [4]. We selected a single-issue ticketing system with tens of thousands of daily new tickets, thousands of assign groups, and tenths of thousands of resolvers. For effective ticket triage and speedy resolution, we employ machine learning (ML), particularly deep learning (DL), techniques to automatically propose which group to allocate, whom to assign, and historically comparable tickets [5]. All these systems are accessible via company network and this entire enterprise IT environment plays a major role in the daily business operations. So that, keep these systems up and running and prompt solutions for issues are very important. That is where the IT help desk software comes to the picture. IT helpdesk ticketing software is being used by companies to provide a centralized facility to troubleshoot and facilitate solutions to IT-related issues [6].

Literature Review:

According to Wikipedia (2008), a typical help desk has several functions. It provides the users a central point to receive help on various computer issues. The help desk typically manages its requests via help desk software, such as an incident tracking system, that allows them to track user requests with a unique ticket number. Some common names for a help desk include: Computer Support Centre, IT Response Centre, Customer Support Centre, IT Solutions Centre, Resource Centre, Information Centre, and Technical Support Centre. Open, High, Low, Close, and Volume were the five distinct variables used in the experiment. The study's findings imply that the price of gold responds to political and economic uncertainty and may be seen as a safe haven because the price of the yellow metal has a negative correlation with both of these factors.

The user notifies the help desk of his or her issue, and the help desk issues a ticket that has details of the problem. If the first level support technician is able to solve the issue, the ticket is closed and updated with documentation of the solution to allow other help desk technicians to reference in the future. If the issue needs to be escalated, it will be updated, noting what was attempted by the technician a dispatched to second level support.

From the mid-1990s research by Middleton (1996) at The Robert Gordon University found that many organizations had begun to recognize that the real value of their help desk(s) derives not solely from their reactive response to users' issues but from the help desk's unique position where it communicates daily with numerous customers or employees. This gives the help desk the ability to monitor the user environment for issues from technical problems to user preferences and satisfaction.

Theory /Framework	Key Concepts	Authors/ Year	Methodology	Datasets	Conclusion
IT Service Management (ITSM) Frameworks	- Incident Management - Problem Management - Change Management	Roel P. Masongsong and Maria Amelia E. Damian / 2016	Literature Review, Case Studies	ITIL Case Studies, Industry Reports	The capabilities of an in-house help desk system that meets the ongoing customization IT needs of the GJU were introduced in this paper.
Incident Management	- Incident Identification - Logging and Categorization - Prioritization - Resolution	Robert Meyer and Sebastian Wittmann/ 2021	Surveys, Case Studies, Observations	Service Desk Records, Incident Reports	We found the topic of creating an automated incident management tool is the dominating topic in this field of research.
Problem Management	- Root Cause Analysis - Trend Analysis - Proactive Problem-Solving	Zukhanye N Kwinana/ 2019	Case Studies, Interviews, Surveys	Problem Resolution Data	Given that the features of JIRA are helpful enough in managing tickets in the system, it is safe to say that it can be applied to project deliverables having those features can help a particular project to move quickly as it highly influences the ticket assignee to work 10 on it and get the job done on time.

Service Desk Operations	- Ticket Handling Best Practices - SLAs - First Call Resolution - Escalation Procedure	Gloria H. W. Liu and Eric T. G. Wang/ 2021	Observational Studies, Industry Reports	Service Desk Logs, SLA Agreements	The currently available help desk does not find itself in a critical position regarding the service accommodation. Howbeit, the improvement curve flattens out in its timely development, which signifies a need for its further boost by adopting new technologies seen as enablers of this potential
Customer Relationship Management (CRM)	- Managing Customer Interactions - Satisfaction and Retention	S.P. Paramesh and K.S. Shreedhara/ 2017	Surveys, Interviews, Case Studies	Customer Feedback, Interaction Logs	The service desk is an important unit within all modern organisation as in most cases they serve as the first point of contact when customers require information or faces challenges with an organisation services. In this research, we assessed the effectiveness of an organisation service desk system and its processes.
Knowledge Management	- Knowledge Capture and Organization - Dissemination - Empowering Support Staff	Alfonsus Fero Jaya Nugroho1 , Melissa Indah Fianty2 ,/ 2012	Case Studies, Knowledge Audits	Knowledge Repositories, Surveys	Technical support agents evaluated the compatibility and usability of the multi-channel support and ticketing interface for online support management system platforms as Highly Acceptable, while the IT instructors found these characteristics of the system as Acceptable and office personnel perceived the functional suitability, usability, and maintainability as Highly Acceptable.

Service Quality Theories	- SERVQUAL Model - Measuring Service Quality	Muhammad Zikri bin Zulkifli / 2011	Surveys, Statistical Analysis	Customer Surveys, Quality Metrics	The Electronic support ticket management system is a simple and excellent web application that has the two major functions: Support ticket tracking and operator assignments. It is an excellent customer or client help support system.

Related work: -

Provides an explanation of the ticket resolution procedure. It offers a thorough explanation of the steps involved in resolving tickets as well as the many strategies for enhancing ticket resolution.

Helpdesk

The helpdesk serves as a hub for the reporting and systematic arrangement of concerns and difficulties. In general, the helpdesk handles problem-solving and other difficulties as a supplemental component of a service role. A helpdesk is a division or role within an organisation that handles or replies to technical inquiries from users. Questions from clients are answered at the support desk. You can send your questions and answers via fax, email, web, or phone. Even helpdesk software facilitates users' ability to use the helpdesk and rapidly get generic answers.

Ticketing

Ticketing is the process by which an organisation tracks the identification, reporting, and resolution of different issues through the use of trouble tickets, also known as problem reports. The creation of a paper-based reporting system led to the development of trouble ticketing systems. The vast majority of them these days are web-based and related to CRM, such as call centres or internet companies. The process of tracking the identification, reporting, and resolution of various issues within an organization through the use of a problem report, commonly referred to as a difficulty ticket, is called ticketing. The development of a crude paper reporting system leads to issues with the ticketing system. Most of them these days are web-based and have CRM features, such as call centres or internet-based companies.

By adding interventions to tickets for incident ticket resolution, software development has effectively improved the ticket triaging process. A study published in 2020 by Gupta claimed that requests for user participation resulted in inefficiencies in the ticket resolution process. Machine learning was used to improve the ticket resolution process by identifying tickets that were likely to need more information during resolution. An approach based on rules was then used to determine the most likely input for these tickets. This work suggests a comparable approach. In this work, tickets that are probably going to be difficult to resolve are identified using machine learning.

Methodology: -

The research approach in question makes use of experiment studies. Experimentation is the process of changing and regulating one or more independent variables while observing the dependent variables in order to spot any variations that might occur when these independent variables are changed in scientific research. For the avoidance of doubt, the variable that is under control is referred to as the independent variable, and the variable that will be impacted as the dependent variable. Furthermore, the data collection methodology used in this study is as follows:

a. Remark.

methods for gathering data through study and close examination of the issues raised.

b. The conversation.

Ask the IT Helpdesk coordinator questions at this point and get direct answers.

Ticketing System:

Implement a ticketing system to track and manage support requests.

Assign unique ticket numbers to each request.

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Prioritize tickets based on urgency and impact on the business.

Knowledge Base:

Maintain a comprehensive knowledge base with FAQs, troubleshooting guides, and solutions to common issues.

Encourage self-service by providing users with access to the knowledge base.

Incident Management:

Establish an incident management process to handle critical issues and outages promptly.

Define clear escalation procedures for incidents that require immediate attention.

Service Level Agreements (SLAs):

Define SLAs for different types of support requests to set expectations for response and resolution times.

Monitor and ensure compliance with SLAs.

Multichannel Support:

Offer support through multiple channels, including phone, email, chat, and a web portal.

Integrate these channels into a centralized system for easy tracking and management.

Remote Support:

Use remote desktop tools to assist users by taking control of their computers when necessary.

Ensure secure and permission-based access for remote support.

Automation:

Implement automation for routine tasks and ticket routing.

Use chatbots for initial user interactions to gather information and provide basic solutions.

User Training and Onboarding:

Provide training and onboarding sessions to educate users on common issues and how to submit support requests.

Offer regular training sessions for new technologies and software.

Team Collaboration:

Foster collaboration among IT support team members to share knowledge and solve complex issues effectively.

Use collaboration tools and platforms to facilitate communication.

Reporting and Analytics:

Collect data on support requests, response times, resolution rates, and user satisfaction.

Analyse this data to identify trends, bottlenecks, and areas for improvement.

The present IT helpdesk submission process at PT Dayanita Kemasindo has been analysed and is explained as follows: Using a mobile phone and phone extension, the user contacts the IT staff in order to take action. 2. The user indicates network errors or printer problems by filling out and submitting the problem submission form to the IT staff at the IT facility. 3. IT personnel personally visit departments that require assistance and finish resolving issues that arise.

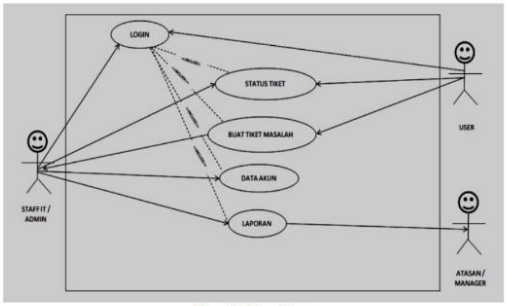

Fig. 1 Use Case

The plan delineates the established functional requirements, and this graphic illustrates the system's functionality from the perspective of external users in easily understood language. Fig. 1 shows a use case diagram for documenting functional and non-functional needs. The figure shows three system actors or users: Staff/Admin, User, and Manager. The systems specified in the functional requirements are utilised by these actors. Every actor or user communicates with every relevant provider, which is organised into smaller systems. Consumers' inputted complaint data was still visible to operators, and administrators had the ability to process data for technicians, operators, and devices.

Results and discussion: -

The relationship graph convolutional neural network model is created using the dataset that was obtained after the preprocessing script was applied. For this work, an 80–20 test-train split was employed.

1. Analysis of Ongoing Company Information Systems In preparing the research, analyse the information system currently running:

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Problems with IT infrastructure is still reported on paper and handled by hand. As a result, there are situations where problems develop because records or report findings are not turned into information, making it impossible to view the history of complaints.

2. Before filling out the paperwork, IT staff members report issues with PT Dayanita Kemasindo's hardware and software. If the issue arises with a computer, they do so over the phone first, and if it arises with an error printer, they go directly to the department that needs to handle the printer. The purpose of this study is to create a web-based IT helpdesk system for all complaints regarding IT facilities. This helpdesk will enable users to view all previous complaints, fix issues with complaints, and give management with reports on complaints that have been received and resolved.

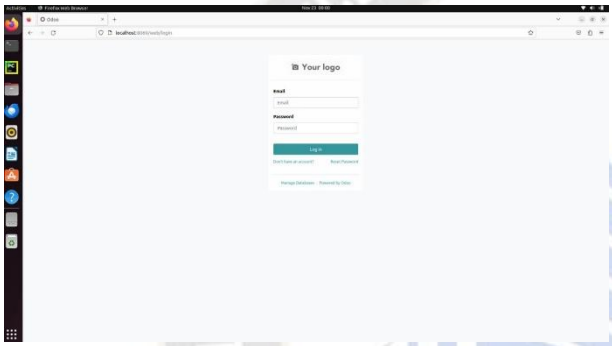

Fig.2 login page

Fig.2 Represent as login page for authorised admin for manage all the things as back-end like all the details of client who is raising the ticket and then admin can assign the problem to resolve that issue. The process is: -

Process Name: Login

Function: To enter the ticketing helpdesk Display

Process Description: Fill in the username and password to enter the ticketing helpdesk.

Discussion: -

Final discussions for a customer helpdesk support system project typically involve reviewing the project's progress, addressing any outstanding issues, and ensuring that the system meets the customer's requirements. Here's a step-by-step guide for conducting final discussions for such a project:

Project Overview:

Start by providing an overview of the project, including its objectives, scope, and the timeline for completion. Make sure all stakeholders have a clear understanding of what the project set out to achieve.

Design Superiority The following benefits are anticipated from developing a Based-on IT Help Desk Ticketing system:

1. Submitting problems at IT establishments that have already made the transition from paper to the system.

2. IT personnel can keep track of all incoming complaints regarding software and hardware.

3. By exporting files to an Excel spreadsheet, IT staff members can notify management of grievances regarding IT facilities that are received and addressed.

This study is focused on EDP Head Office's concept aims to record any complaints about IT facilities via a reliable problem-solving system that the corporation has in place. Data input from a programme that is the responsibility of this department.

Project Status Review:

Discuss the current status of the project. Review milestones, deliverables, and any deviations from the original project plan. Highlight any successes and challenges encountered throughout the project.

Requirements Confirmation:

Ensure that all customer requirements and expectations have been met. Verify that the helpdesk system aligns with the initial specifications and any changes made during the project. This is a critical step to avoid misunderstandings or unmet expectations.

User Acceptance Testing:

If applicable, discuss the results of user acceptance testing (UAT). Ensure that the system has undergone rigorous testing and that any reported issues have been addressed. Confirm that the system meets the end users' needs and expectations.

Training and Documentation:

Discuss the training provided to end users and support staff. Ensure that comprehensive documentation is available to assist users in using the helpdesk system effectively.

Data Migration:

If the project involves migrating data from an existing system, review the success of data migration efforts. Confirm that all essential data has been transferred accurately and is accessible in the new system.

Performance and Scalability:

Evaluate the system's performance and scalability. Ensure it can handle the expected volume of support requests, users,

and future growth. Discuss any performance optimization measures taken.

Security and Compliance:

Address security measures and compliance requirements. Confirm that the system is secure and meets regulatory or industry standards for data protection, privacy, and other relevant areas.

Service Level Agreements (SLAs):

Review the SLAs defined for the helpdesk support system, such as response times, resolution times, and service availability. Ensure that the system is capable of meeting these SLAs.

Issues and Defects:

Discuss any outstanding issues or defects and their status. Ensure that a plan is in place to address and resolve these before the system is considered complete.

User Training and Adoption:

Discuss the strategies for user training and system adoption. Ensure that end users understand how to use the system effectively and that change management efforts are in place.

Handover and Support:

Confirm the handover process, including the transition of responsibility from the project team to the support team. Discuss ongoing support, maintenance, and monitoring arrangements.

Documentation and Knowledge Transfer:

Ensure that all project documentation, including design documents, user manuals, and technical documentation, is complete and accessible. Discuss knowledge transfer to the support team.

Project Closure:

Discuss the formal closure of the project, including obtaining sign-offs from all stakeholders. Ensure that all project-related contracts and agreements are fulfilled.

Feedback and Lessons Learned:

Encourage feedback from the customer and project team regarding what went well and what could be improved in future projects. Document lessons learned for continuous improvement.

Future Enhancements:

Discuss any potential future enhancements or additional features that could be considered for the helpdesk support system.

Sign-Off and Approval:

Finally, obtain formal sign-off and approval from the customer, indicating that they are satisfied with the delivered system and project closure.

By following these steps and conducting a thorough final discussion, you can ensure that the customer helpdesk support system project is successfully completed, and all stakeholders are aligned in their expectations and responsibilities.

Conclusions: -

In a recent Microsoft customer survey, 95% of participants said that customer service influenced their brand choice and brand loyalty. Microsoft (2018). Help desks supporting services unrelated to customers, like applications for access to corporate resources, benefit from lower costs and increased organizational productivity when incident tickets are resolved efficiently. As a result, actions to streamline the ticket resolution procedure have significant advantages.

Variables are found in the information and actions related to ticket resolution. For data with this feature, a graph data model fits well. It expedites the ticket analysis process for desk analysts by enabling efficient ad hoc querying of ticket data. Graph machine learning approaches can be used to improve the ticket resolution process. This study described a technique for identifying tickets that could be challenging to handle. By intervening on such tickets, either manually or through the use of technologies like chatbots, the ticket resolution process can be improved.

For privacy reasons, the dataset used in this work did not include textual descriptions of ticket details. Applying the methodology presented in this work to a dataset that includes textual descriptions of the ticket activities and an explanation approach for neural network models similar to those discussed in Molnar (2020) should yield additional insights into the ticket resolution process. The results of this study lend support to the evaluation of graph-based machine learning methods for help desk applications.

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