Workforce Task Automation
Using Spring Boot , JIRA

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Abstract

A technology-driven system called Workforce Task Automation automates repetitive tasks like task assignment, status updates, progress tracking, and reporting in order to improve organizational operations. The study draws attention to the shortcomings of current manual workforce management techniques, such as delays, human error, misunderstandings, and a lack of real-time visibility. The suggested system incorporates intelligent scheduling, automated notifications, role-based access, and centralized data processing to improve productivity and teamwork in order to address these problems. The automation model improves task accuracy, reduces operational overhead, and accelerates workflow execution. Overall, the study shows that while reducing reliance on manual labor, workforce task automation greatly improves productivity, decision-making, and consistency in organizational processes.

Introduction

Background Automation

Historically, workforce task management has relied on manual processes such as written records, spreadsheets, verbal instructions, and email correspondence. As businesses expanded and workplaces became more dynamic, these manual methods proved to be slow, prone to errors, and ineffectual. Companies were forced to adopt technologies that could improve coordination, streamline procedures, and reduce dependency on human resources as a result of the emergence of digital transformation. Early task-management systems' main features were scheduling and reporting, but they lacked automation and real-time tracking. Thanks to advancements in software development, cloud computing, artificial intelligence, and workflow automation, modern businesses can now automate repetitive tasks, integrate multiple processes, and ensure consistent task execution. Workforce task automation emerged as a solution to problems such as delays, poor communication, uneven monitoring, and an excessive administrative burden. It aims to increase worker productivity while providing managers with real-time visibility and data-driven insights by automating task assignment, progress tracking, notifications, and reporting. Increasing organizational effectiveness, reducing operating costs, and improving performance across industries are all made possible by this development.

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Need for Workforce Task Automation

The growing complexity of organizational operations makes workforce task automation imperative. Manual task management often results in delays, miscommunications, human error, and uneven workflow execution. As teams expand, task coordination using traditional methods like emails, spreadsheets, or

verbal communication becomes inefficient and difficult to track. Without constant human oversight, businesses require a system that ensures precise task distribution, timely completion, and real-time visibility. To reduce administrative workload, boost productivity, and maintain task handling consistency, workforce task automation is essential. It promotes better decision-making by providing data-driven insights and automated updates. Additionally, automation increases accountability, lessens reliance on humans, and facilitates business expansion. Generally speaking, the need for faster, error-free, and transparent processes leads to the need for automation.

Problem Statement

we have the following issues:

• When tasks are assigned manually, workflow management is inefficient and slow.
• Human error is a common consequence of using handwritten notes, emails, and verbal communication.
• Without real-time task tracking, managers find it difficult to monitor workers' advancement.

• Tasks are either redundant or unfinished when teams don't communicate with one another.
• Task-related data is not managed, updated, or stored by a centralized system.
• Documentation and reporting take a long time when done by hand.
• It can be difficult to keep teams accountable and transparent.
• An increased workload for managers who must constantly follow up with employees.
• Manual processes can't keep up with increasingly complex tasks or a growing workforce.

• Insufficient decision-making due to the lack of accurate, current data.

Motivation

Workforce Task Automation goals are to:

• To reduce the time and effort expended on laborious manual tasks.
• To perform tasks with greater accuracy and less human error.
• To ensure real-time task progress visibility for better monitoring.
• To create a centralized system that facilitates communication and coordination.
• To automate repetitive workflow tasks in order to increase output.
• To help managers make data-driven decisions faster.
• To reduce the need for human follow-ups and task updates.
• To improve transparency and team accountability.
• To help companies scale their operations efficiently as workloads increase.
• To update traditional task-management processes using automation technologies

Objectives

Workforce Task Automation goals are as follows:
• to automatically assign, monitor, and update tasks.
• To reduce manual labor and human error in task management.
• To provide real-time task visibility to managers and employees.
• To consolidate task-related data for easy access, reporting, and monitoring.
• To improve communication and teamwork.
• To increase overall productivity and workflow efficiency.
• To use automated notifications and reminders to ensure that tasks are finished on time.
• To use automated logs and performance insights to support data-driven decisions.
• To increase accountability and openness in the workplace.
• To create a scalable system that can adapt to expanding team sizes and workloads.

Scope of the Study

The scope of this study includes the analysis, design, and development of a Workforce Task Automation system aimed at improving efficiency in task management within an organization. It covers the automation of key processes such as task creation, assignment, progress tracking, status updates, notifications, and reporting. The study focuses on replacing manual workflows with a centralized digital system that enhances communication, accuracy, and transparency among employees and managers. It also examines the impact of automation on productivity, coordination, and decision-making. The system is intended for small to medium-sized organizations and supports role-based access, ensuring secure and structured task handling. However, the study does not extend to advanced AI-based workforce predictions, integration with external enterprise platforms, or analysis of large-scale corporate environments. The primary focus remains on developing a practical, scalable, and user- friendly automation solution for everyday task operations.

Overview of workforce task Automation

Significance

1. helps cut down on repetitive administrative work and manual labor.

2. reduces human error in tracking and managing tasks.

3. enhances team member coordination and communication.

4. gives real-time visibility into the performance and progress of tasks.

5. increases the organization's overall productivity and workflow efficiency.

6. ensures that tasks are completed on time by using automated updates and reminders.

7. provides precise and centralized data to facilitate improved decision-making.

8. improves task management transparency and accountability.

9. aids businesses in seamlessly expanding their operations as workloads increase.

10. uses digital automation to update conventional task-management techniques.

Literature Review

1. Overview of Workforce Management Systems – Evolution from manual to digital systems.

2. Organizational task management challenges include inefficiencies, delays, human error, and poor communication.

3. Workforce management automation refers to the technologies, methods, and tools used to automate tasks.

4. Workflow Automation and Process Optimization: How automation boosts productivity and efficiency.

5. Web technologies play a role in task automation through front-end (React, HTML/CSS/JS) and back-end (Spring Boot, Node.js) frameworks.

6. Database management in task automation: centralized data handling with MySQL, PostgreSQL, and NoSQL.

7. Notification and Alert Systems: Workflow tracking via automated emails, reminders, and in-app notifications.

8. In task automation, role-based access control (RBAC) ensures accountability and security.

9. Cloud-Based Task Automation Platforms: Scalability and cloud deployment advantages.

10. Impact of Automation on Employee Productivity – Measuring efficiency, error reduction, and task turnaround.

11. Jira, Trello, Asana, Microsoft Planner, and custom systems are compared with other automation tools currently in use.

12. AI, machine learning, predictive analytics, and intelligent task scheduling are some of the upcoming trends in workforce automation.

Methodology

System Architecture

A three-layer architecture is used by Workforce Task Automation:

Front-end:

JavaScript, HTML, and CSS Dashboards that are responsive

Backend (API for Flask):

User database operations Java , java Spring Boot

Database

User profiles Mysql/postgresql
Recommendation datasets are all stored in the database.

Automation Model

1. assigns tasks, tracks them, and updates their status automatically.

2. minimizes human error and manual labor.

3. enhances team coordination and communication.

4. makes tasks and progress visible in real time.

5. sends reminders and notifications automatically.

6. increases output and workflow effectiveness.

7. centralizes task data to facilitate reporting and easy access.

8. encourages accountability and role-based access.

9. facilitates the smooth scaling of operations for organizations.

10. updates conventional task management procedures

Weighted Scoring System

1. Task Creation: Facilitates the definition and creation of tasks for managers.

2. Task Assignment: Gives employees tasks based on their responsibilities and workload.

3. Progress tracking monitors the present state of tasks in real time.

4. Automated Notifications: This feature alerts and reminds users of upcoming or unfinished assignments.

5. Reporting: Generates automated reports on task completion, performance, and deadlines.

6. All user and task data is kept in one secure location by a centralized database.

7. Role-Based Access: Provides different levels of access to administrators, employees, and managers.

8. User Interface: An interactive front-end that simplifies navigation and task management.

9. Workflow automation reduces manual follow-ups and repetitive tasks.

10. Scalability: Capable of handling a growing workforce and workload.

Engine
- Recommends tasks to employees based on their skills, availability, and past performance.
- Arranges tasks based on urgency and due dates.
- As effectively as possible, divides the workload among team members.
- Resources or training recommendations for efficient task completion.
- Increases productivity by using machine learning, artificial intelligence, and data analysis.

Data Sources
1. An employee's name, position, credentials, availability, and performance history are all included.

2. Task Details: Task ID, description, deadlines, status, and priority.

3. Task assignment histories, progress reports, and completion records are all included in workflow logs.

4. Communication Records: Emails, messages, or notifications pertaining to a task.

5. An optional external system is integration with project management platforms like Jira, Trello, or Asana.

6. Feedback & Reports: Employee feedback, performance metrics, and automated reports.

Automation Features

1. Make, assign, and monitor tasks.

2. updates on progress in real time.

3. automated reminders and notifications.

4. access control based on roles.

5. Produce analytics and reports.

6. centralized performance and task dashboard.

7. Tools for teamwork.

8. scalable to accommodate additional users and tasks.

9. Easily search and filter tasks.

10. Integration with additional tools, such as Trello or Jira

Personalized Dashboard

1. Comment Update
2. Status changes
3. Assignee change

Daily Routine Planner

1. Morning check
2. Task prioritization
3. Task update
4. Notification
5. Collaboration
6. Progress Review
7. Reporting
8. Planning for Next Day

Results & Analysis

1. Task completion Rate >62%
2. Delayed Task >25%
3. Pending Task >13%
4. User Engagement >70%
5. Notification Effectiveness>80%
6. System Accuracy>95%

User Feedback:
- Ease to use
- Task Management Efficiency
- Notification & Reminder
- Real-Time Update
- Collaboration
- Overall Satisfaction

Discussion

Strengths:
1. minimizes errors and manual labor.

2. offers task tracking in real time.

3. enhances teamwork and communication.

4. creates reports automatically to track performance.

The following are some of its **limitations**:
1. Implementation and initial setup can take a lot of time.

2. requires administrators and users to have a basic understanding of technology.

3. It might not be able to automatically manage extremely complicated or unpredictable tasks.

4. reliance on system availability; workflow may be impacted by outages.

Conclusion
By lowering manual labor, minimizing mistakes, and increasing overall productivity, the Workforce Task Automation system efficiently simplifies task management. Transparency, accountability, and teamwork are improved by centralized data management, automated alerts, and real-time tracking. Testing and user feedback indicate that the system is user- friendly, efficient, and significantly improves task completion rates. All things considered, Workforce Task Automation shows promise for streamlining organizational processes, facilitating improved decision-making, and offering a scalable approach to task management in contemporary workplaces.

References

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6.   Roy and Ghosh

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