Journal of Frontiers in Multidisciplinary Research

An Agile Workflow Management Framework for Industrial Operations: Migrating from Email-Based Systems to Visual JIRA-Kanban Platforms

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Article Info
E-ISSN: 3050-9726
P-ISSN: 3050-9718
Volume: 04
Issue: 01
January-June 2023
Received: 18-12-2022
Accepted: 14-01-2023
Published: 12-02-2023
Page No: 72-81

Abstract
This presents an exploration of migrating from traditional email-based workflow systems to visual JIRA-Kanban platforms in industrial operations. In many industries, email-based systems have long been used to manage tasks, communicate deadlines, and track project progress. However, these systems often lead to inefficiencies such as delayed communication, difficulty in tracking task status, and a lack of transparency. This proposes the adoption of an agile workflow management framework utilizing JIRA, a popular project management tool, alongside Kanban boards, which allow for visual representation of tasks and real-time progress tracking. The aim is to enhance workflow efficiency, improve task visibility, and streamline communication across teams. The integration of JIRA and Kanban into industrial operations aligns with agile principles, which emphasize flexibility, iterative progress, and continuous improvement. This explores the practical steps required for the migration, from planning and setup to staff training and pilot testing. Furthermore, it provides case studies from manufacturing and logistics sectors to illustrate the tangible benefits of this transition, including increased operational efficiency, reduced bottlenecks, and enhanced team collaboration. The findings highlight that adopting JIRA-Kanban systems leads to better workflow visualization, reduced dependency on emails, and more efficient resource management. This also discusses challenges such as resistance to change and technical integration hurdles, offering strategies to overcome these obstacles. This concludes that migrating to agile workflow management with JIRA-Kanban not only improves operational performance but also fosters a culture of continuous improvement in industrial environments. Future research directions include exploring advanced integrations with other industrial systems for further optimization.

DOI: https://doi.org/10.54660/.IJFMR.2023.4.1.72-81

Keywords: Agile workflow, Management framework, Industrial operations, Email-based systems, Visual JIRA-Kanban

1. Introduction

In industrial operations, efficient workflow management is critical to ensuring smooth, continuous, and optimized production (Fredson *et al*., 2021). Industrial sectors, including manufacturing, logistics, and supply chain management, rely heavily on well-coordinated workflows to meet deadlines, manage resources, and address potential disruptions quickly. Traditional workflow systems, especially email-based communication tools, are widely used in these environments to track tasks, exchange updates, and manage project timelines (Ogunsola *et al*., 2021).

However, this approach often results in inefficiencies, miscommunications, and a lack of task visibility. Email systems tend to create information silos, making it difficult for teams to track the status of ongoing tasks in real-time, leading to delays and decision-making bottlenecks. Furthermore, there is often a reliance on manual tracking systems, which can lead to errors, lost tasks, and lack of accountability (Adewale *et al*., 2021).

As industries increasingly demand higher productivity, flexibility, and responsiveness, there is a growing need for more streamlined and effective workflow management systems. Agile workflow management, originally popularized in software development, has gained traction in industrial environments due to its emphasis on iterative progress, adaptability, and continuous improvement. Agile principles focus on breaking down complex projects into smaller, manageable tasks, which allows teams to remain adaptable to changing conditions (Adekunle *et al*., 2021). Key aspects of agile methodologies, such as daily stand-ups, iterative development cycles, and feedback loops, provide opportunities for continuous optimization and team collaboration (Elujide *et al*., 2021). In the context of industrial operations, agile practices enhance team coordination, resource allocation, and overall efficiency by creating dynamic, transparent, and accountable workflows. Moreover, agile methodologies prioritize cross-functional team collaboration, providing workers with greater autonomy to make decisions and solve problems more rapidly (Ogbuagu *et al*., 2022).

This aims to explore the migration from email-based workflow management systems to visual JIRA-Kanban platforms, which represent a modern and more efficient solution for managing workflows in industrial settings. JIRA, a project management tool by atlassian, integrated with Kanban boards, provides a visual representation of work processes, task statuses, and bottlenecks. This visual system enables real-time tracking and transparent communication across teams, ensuring everyone has a clear understanding of the workflow and task priorities. The goal of this is to examine the benefits of transitioning to JIRA-Kanban systems, including enhanced workflow visibility, improved communication, and a more agile response to production challenges.

The adoption of JIRA-Kanban platforms offers several advantages in industrial operations (Akinsooto *et al*., 2012). These systems facilitate more accurate task management, reduce reliance on emails and spreadsheets, and enhance overall operational transparency. By providing a visual interface for tracking progress, JIRA-Kanban also helps identify inefficiencies, such as bottlenecks and delays, allowing teams to address them proactively. Additionally, the adaptability of agile workflows aligns with dynamic industrial environments where priorities and production schedules are often subject to change. This will analyze the benefits of utilizing JIRA-Kanban platforms, such as improved productivity, faster response times to production issues, and enhanced collaboration among cross-functional teams. The shift from email-based systems to visual JIRA-Kanban platforms marks a significant advancement in how industrial operations manage workflows. The adoption of agile methodologies not only improves task visibility and communication but also fosters a culture of continuous improvement (Adekunle *et al*., 2023). By adopting agile principles in combination with the visual management tools of JIRA and Kanban, industrial organizations can achieve higher efficiency, adaptability, and collaboration key elements in today's competitive and fast-paced industrial landscape (Adekunle *et al*., 2023).

2. Methodology

This systematic review approach was chosen to ensure comprehensive coverage of the subject while identifying key factors, benefits, and challenges associated with the transition to agile methodologies in industrial settings. The methodology followed a clear and structured process, focusing on the collection, selection, and analysis of relevant studies, reports, and case examples that align with the goals of the research.

A comprehensive search strategy was devised to identify studies related to agile workflow management, JIRA-Kanban integration, and the challenges of migrating from email-based systems. The search included academic journals, industry reports, and case studies from databases such as IEEE Xplore, ScienceDirect, SpringerLink, and Google Scholar. Keywords such as "Agile workflow management," "JIRA-Kanban," "industrial operations," "email-based systems," and "workflow migration" were utilized to ensure that the review captured a broad range of relevant materials. The inclusion criteria were established to focus on studies that addressed the transition to agile tools, particularly visual JIRA-Kanban boards, in the context of industrial operations. Furthermore, the research aimed to include both qualitative and quantitative studies that provided insights into operational efficiency, productivity improvements, and real-world application challenges.

Upon reviewing the initial set of articles, the selected studies were screened based on predefined inclusion and exclusion criteria. Articles were excluded if they did not focus on the application of JIRA-Kanban in industrial operations or if they lacked empirical evidence related to workflow optimization. Studies that examined the broader application of agile methodologies in industries such as software development, IT, or service industries were also excluded if they did not provide direct insights into industrial operational settings.

After identifying and reviewing the relevant studies, the selected articles were subjected to a qualitative synthesis. Key findings from the selected studies were extracted and categorized into themes related to the benefits of agile workflow management, challenges of migrating from email-based systems, and the effectiveness of JIRA-Kanban platforms in improving workflow efficiency. Studies that highlighted the impact of visual management tools on team collaboration, communication, and task tracking were given special emphasis, as these factors are central to understanding the benefits of transitioning to agile platforms in industrial environments.

Finally, the synthesis of the literature was used to provide a comprehensive understanding of the factors influencing the adoption of JIRA-Kanban platforms, including challenges faced by organizations, the role of team dynamics, and the operational outcomes. By following the PRISMA methodology, this review ensures a structured and transparent approach to examining the impact of migrating from traditional workflow management systems to modern agile tools, thus offering valuable insights for industrial operations looking to optimize their workflow management practices.

2.1 Current state: email-based workflow systems

Email-based workflow systems have long been a staple in industrial operations, offering a simple and widely accessible method for task assignment, communication, and document sharing (Odunaiya *et al*., 2021). In these systems, emails serve as the primary tool for conveying task assignments, updates, and feedback between team members. However, despite their ubiquity, email-based systems exhibit a range of limitations and inefficiencies that hinder productivity, complicate communication, and impact overall operational performance.

In many industrial settings, email has become the de facto tool for managing workflows. Task assignments, project updates, and communications are often sent and received through emails, which are typically organized in separate threads or folders (Chukwuma-Eke *et al*., 2021). Employees rely on their inboxes to manage task lists, review project statuses, and communicate with colleagues or supervisors. While this method may appear functional at first glance, it often becomes cumbersome as tasks multiply and teams grow. With multiple emails threading through various topics, a lack of centralization leads to confusion about task ownership, priority, and deadlines. Despite its convenience, the reliance on email for workflow management introduces a number of inefficiencies. First, email-based systems suffer from poor visibility (Okolie *et al*., 2022). Without a visual interface, employees must sift through their inboxes to find task-related messages, which leads to lost information and delays in execution. Task assignments are not always clear, leading to missed deadlines, misunderstandings, and unclear responsibilities. Furthermore, emails are often overlooked or buried in overloaded inboxes, and without centralized tracking, team members may forget about, or misunderstand the status of, ongoing tasks (Adewale *et al*., 2021). This lack of real-time visibility makes it difficult for managers and team leaders to track the progress of projects and identify bottlenecks.

Email-based systems introduce several challenges, particularly in industrial operations, where efficiency, communication, and task coordination are paramount. One significant issue is the difficulty in tracking tasks and progress. Since emails are often sent back and forth between employees, it becomes hard to identify whether a task is completed, delayed, or stuck at a certain stage in the workflow. The scattered nature of email correspondence leaves little room for clear task ownership and accountability, which leads to fragmented workflow management (Balogun *et al*., 2021). As a result, tasks may be completed late or overlooked entirely, undermining project timelines and goals. Another challenge of email-based systems is the lack of centralized task management. In most cases, workers must rely on their individual inboxes or personal to-do lists to track their assignments. This decentralized approach means that there is no unified view of tasks across teams or departments. Supervisors often lack a holistic understanding of progress, making it difficult to manage resources effectively or make informed decisions about workload distribution (Onukwulu *et al*., 2023; Basiru *et al*., 2023). In contrast, a centralized task management platform would provide a visual overview of task statuses, assignment details, and priority levels in one location, making it easier to ensure that workloads are balanced (Ogbuagu *et al*., 2023). Moreover, email-based systems are prone to miscommunication and the loss of critical information. Emails often lack clarity, especially when tasks are assigned without adequate context, or when key information is not emphasized. Furthermore, as email chains grow longer, essential details can become buried in replies and attachments, leading to confusion and mistakes. Miscommunication in industrial operations is particularly dangerous, as it can result in delays, resource mismanagement, and even safety hazards in certain settings (Ogbuagu *et al*., 2023). Without a reliable system to track and verify tasks, mistakes can cascade into larger operational problems. Emails also introduce inefficiencies related to delays in communication. it can take time for all parties to provide feedback, leading to slower decision-making. This delay in communication impedes workflow efficiency, causing longer lead times and missed opportunities. Additionally, task changes or updates can get lost in transit if they are not properly communicated to all relevant stakeholders, which adds another layer of complexity to managing workflows effectively.

Fig 1: Challenges in Industrial Operations with Email Systems

While email-based systems have served as a fundamental tool for workflow management in industrial operations, they are laden with inefficiencies and limitations that hinder productivity, communication, and task management (Bristol-Alagbariya *et al*., 2022). The lack of visibility into task progress, decentralized management, and increased risk of miscommunication all contribute to a less-than-optimal workflow, particularly in environments where efficiency is paramount. These challenges underscore the need for a more modern and streamlined approach to workflow management one that leverages agile methodologies and visual tools to address these operational shortcomings and create a more efficient, collaborative, and transparent system as shown in figure 1 above (Onukwulu *et al*., 2021; Chikezie *et al*., 2022).

2.2 Agile workflow management and Jira-Kanban integration

Agile workflow management has become increasingly relevant in industrial environments due to its ability to address the fast-paced, dynamic nature of these operations (Afolabi and Akinsooto, 2021). By prioritizing flexibility, iterative cycles, and continuous improvement, agile methodologies offer an approach that aligns well with the constant need to adapt and optimize production processes.

The integration of tools like JIRA and Kanban further enhances these principles, creating an efficient, transparent, and adaptable system for managing workflows.

Agile methodology is built upon several core principles that are particularly beneficial in industrial settings (Basiru *et al*., 2023). One of its key tenets is the use of iterative work cycles or sprints, which allow teams to break down large tasks into smaller, manageable chunks. This approach ensures that work is continuously evaluated, adapted, and improved upon, which leads to more efficient processes and reduced waste. In industrial environments, where timelines are tight and production is often time-sensitive, agile's flexibility allows teams to respond quickly to changes in demand or unexpected issues (Akinsooto, 2013). Another important aspect of agile is the focus on flexibility. In traditional work management systems, processes are often rigid and defined, which can make adapting to changing conditions difficult. Agile, on the other hand, promotes adaptability by encouraging regular feedback loops and providing teams the freedom to adjust priorities and workflows based on new insights or emerging challenges (Onukwulu *et al*., 2022). This flexibility is crucial in industrial operations, where supply chain disruptions, shifts in customer demands, and other variables require constant reevaluation of tasks. Agile also emphasizes continuous improvement, which aligns with the principles of lean manufacturing. Regular reviews and retrospectives allow teams to assess what's working well and identify areas for optimization. This iterative process fosters a culture of ongoing efficiency gains, where inefficiencies and bottlenecks can be systematically eliminated.

JIRA, a widely used project management tool, is designed to support agile methodologies, making it ideal for managing workflows in fast-paced environments. JIRA allows teams to track tasks, assign responsibilities, and monitor progress, all within a centralized platform. One of the standout features of JIRA is its ability to provide real-time updates, which allows team members to stay informed on task status and any changes in priority or deadlines (Adewale *et al*., 2022). This real-time communication ensures that no critical information is missed, which is particularly important in industrial operations where delays can lead to significant inefficiencies. Kanban, a visual workflow management method, is integrated into JIRA to enhance task tracking. Kanban boards provide a clear, visual representation of work tasks, allowing teams to track the status of each task across various stages of completion. Tasks are typically represented as cards on the board, which are moved from one column to the next as they progress through different stages. These columns might include stages such as "To Do," "In Progress," and "Completed." Kanban boards are especially useful in industrial operations where visualizing workflows can help teams quickly identify bottlenecks and optimize task assignments. Key features of JIRA and Kanban boards include task prioritization and workflow visualization. JIRA allows users to prioritize tasks based on importance, deadlines, or dependencies (Adebisi *et al*., 2021). This feature ensures that the most critical tasks are handled first, reducing the risk of delays. Additionally, Kanban boards provide clear visibility into how tasks flow through the system, helping identify areas where work is piling up or where delays may occur. This visual management system is particularly useful for industrial operations where maintaining smooth workflows is key to meeting production goals (Okeke *et al*., 2023).

The transition from email-based or traditional systems to JIRA-Kanban offers several key advantages, making it an attractive solution for industrial operations seeking to improve workflow efficiency (Onukwulu *et al*., 2022). One of the most notable benefits is improved task visibility and management. With JIRA-Kanban, all tasks are visible on the Kanban board, making it easy to see what is being worked on, who is responsible for each task, and what still needs to be done. This visibility ensures that no task slips through the cracks and that team members can quickly adjust priorities as needed. In contrast, email-based systems often result in disorganized communication, making it difficult to track task progress and ensure that responsibilities are clear (Adewale *et al*., 2023).

JIRA-Kanban also streamlines communication and collaboration within teams. Since all information is centralized on the JIRA platform, team members can easily comment, ask questions, and provide updates directly on tasks (Adebisi *et al*., 2022). This eliminates the need for back-and-forth emails and ensures that everyone is on the same page. Additionally, the integration of real-time updates allows for faster decision-making, as teams can quickly see the status of tasks and make necessary adjustments. Operational efficiency and flexibility are also significantly increased with the use of JIRA-Kanban. Teams can adapt their workflows quickly based on real-time data and feedback, ensuring that resources are always optimally allocated. Moreover, by using a visual tool to manage tasks, it's easier to spot inefficiencies, bottlenecks, or redundant processes that can be eliminated. This leads to smoother operations, fewer delays, and a more agile approach to managing production schedules. Finally, decision-making and reporting are enhanced through JIRA's data analytics capabilities. With detailed insights into task performance, team productivity, and workflow bottlenecks, managers can make more informed decisions about resource allocation, process improvements, and team performance. JIRA also allows for the creation of custom reports, which can be used to track key performance indicators (KPIs) and evaluate the impact of changes made to workflows (Chukwuma-Eke *et al*., 2022).

The integration of agile principles and JIRA-Kanban boards into industrial workflow management offers several distinct advantages over traditional email-based systems. Agile's iterative work cycles, flexibility, and focus on continuous improvement make it particularly well-suited for industrial environments that demand efficiency, adaptability, and rapid response to changes. JIRA's project management capabilities, combined with Kanban's visual workflow management, provide teams with real-time updates, improved task visibility, and enhanced collaboration (Adekunle *et al*., 2023). These tools not only increase operational efficiency and flexibility but also facilitate better decision-making and reporting. By migrating to a JIRA-Kanban platform, industrial operations can foster a more streamlined, transparent, and agile workflow management system, leading to improved productivity and greater alignment with market demands.

2.3 Migration process: from email to Jira-Kanban

The migration from email-based systems to a JIRA-Kanban platform represents a significant shift in workflow management for industrial operations (Elujide *et al*., 2021). This transition not only modernizes task management but

also enhances transparency, collaboration, and efficiency. A well-structured migration process is crucial for ensuring that the new system aligns with the specific needs of the organization and its workforce (Onukwulu *et al*., 2023). The process can be divided into three key phases: planning the migration, implementing JIRA-Kanban in industrial operations, and testing and gathering feedback.

The first step in migrating from email-based systems to a JIRA-Kanban platform is planning the transition. This phase involves identifying the key workflows that will be transferred to the new system. In email-based systems, workflows are often fragmented and dispersed across numerous threads, making task tracking and accountability difficult (Ajayi and Akerele, 2021). To address this, it is essential to define which workflows are most critical to the organization and how these processes will be organized on the new JIRA-Kanban platform. During this stage, it is necessary to map out the specific tasks and the stages through which they pass. JIRA-Kanban boards are typically structured in columns representing various stages of a workflow, such as "To Do," "In Progress," and "Completed." For industrial operations, these stages might need to be customized to reflect specific production phases or operational processes. Identifying these stages and determining how tasks will move between them is an essential part of the migration process. Additionally, it is important to define team roles within the new system. JIRA allows for assigning tasks to specific individuals or groups, providing clarity on responsibility and accountability. Understanding team structures and how different roles interact with the workflow can ensure the Kanban boards are set up to optimize productivity (Onukwulu *et al*., 2021). The clearer the process mapping and role assignments, the smoother the transition to the new system will be.

Once the migration plan is in place, the next phase is implementing JIRA-Kanban in the industrial environment (Odunaiya *et al*., 2022). This step begins with setting up JIRA and configuring the Kanban boards to match the pre-identified workflows. JIRA offers a wide range of customization options, allowing organizations to tailor the platform to their specific needs. Configuring JIRA also includes establishing the rules and permissions for task management. JIRA can be set up to ensure that only designated individuals or teams can move tasks between certain stages or perform specific actions, enhancing accountability and workflow integrity. Furthermore, establishing proper integrations with other tools, such as inventory management or ERP systems, can help create a seamless experience between different operational functions (Fredson *et al*., 2022). Once the system is configured, it is important to train the staff and teams on using the new system. Training should focus on how to use the Kanban boards for task tracking, updating task statuses, and utilizing JIRA's features for effective communication and collaboration. This may involve creating user manuals, conducting hands-on workshops, and offering ongoing support to ensure that team members are comfortable with the system (Ogbuagu *et al*., 2023). Given that the migration from email to a digital tool can be a significant change for many employees, it is critical to have a robust training program to ensure a smooth transition and reduce resistance to the new system.

After implementing the JIRA-Kanban system, pilot testing should be conducted in a controlled environment before full-scale adoption (Ofodile *et al*., 2020). This allows teams to experiment with the new system on a smaller scale, providing an opportunity to address any issues or inefficiencies that may arise. During the pilot phase, teams can begin using the system with a subset of tasks, allowing for observation of how well the platform supports workflow management in real-world conditions. Collecting feedback from teams is a crucial part of this process. Team members' experiences with the new system can offer valuable insights into what is working well and what may need adjustment. Addressing these issues early in the pilot phase can help prevent larger problems during the full-scale implementation (Okolie *et al*., 2023). Based on the feedback received, the system can be refined to better meet the needs of the teams. This may involve adjusting workflows, modifying Kanban board structures, or implementing additional features within JIRA to address any shortcomings. Continuous feedback and system refinement are key to ensuring the system is optimized for the specific requirements of the industrial operation.

The migration from email-based systems to a JIRA-Kanban platform requires a well-planned, methodical approach to ensure its success in industrial operations. By identifying key workflows, configuring JIRA to match these processes, and training staff on using the new system, organizations can achieve a smoother transition (Chukwuma-Eke *et al*., 2022). Pilot testing and incorporating feedback are essential to refining the system and ensuring that it meets the needs of all stakeholders. Ultimately, the migration to JIRA-Kanban can enhance task visibility, improve communication, and streamline workflows, resulting in more efficient and effective industrial operations.

2.4 Benefits of Jira-Kanban-based workflow management

The adoption of a JIRA-Kanban-based workflow management system offers significant benefits for organizations, particularly in industrial operations where efficiency, communication, and visibility are critical as shown in figure 2 (Okeke *et al*., 2023). Transitioning from traditional email-based systems to a visual platform like JIRA-Kanban can drastically improve task management, streamline communication, and provide better insights into performance. These benefits translate into increased operational efficiency, enhanced collaboration, and more effective performance tracking, all of which contribute to improved overall productivity and success.

One of the most compelling advantages of a JIRA-Kanban-based workflow management system is the marked improvement in efficiency. Traditional email-based systems often involve multiple back-and-forth exchanges for task assignments, status updates, and approvals (Adekunle *et al*., 2023). These processes can slow down response times and increase the time required to complete tasks. In contrast, JIRA-Kanban enables faster response times and task completion by centralizing tasks and clearly defining workflows. Each task is represented visually on a Kanban board, with clearly defined stages such as "To Do," "In Progress," and "Completed." This visual representation allows team members to see at a glance where tasks are in the process, reducing confusion and accelerating decision-making. In addition to faster task completion, JIRA-Kanban helps reduce bottlenecks by highlighting tasks that are delayed or stuck in a particular stage. With real-time visibility into task progress, teams can proactively identify bottlenecks

and allocate resources to where they are most needed. This dynamic and flexible approach to resource allocation ensures that teams can adapt quickly to shifting demands, enhancing overall operational efficiency (Govender *et al*., 2022).

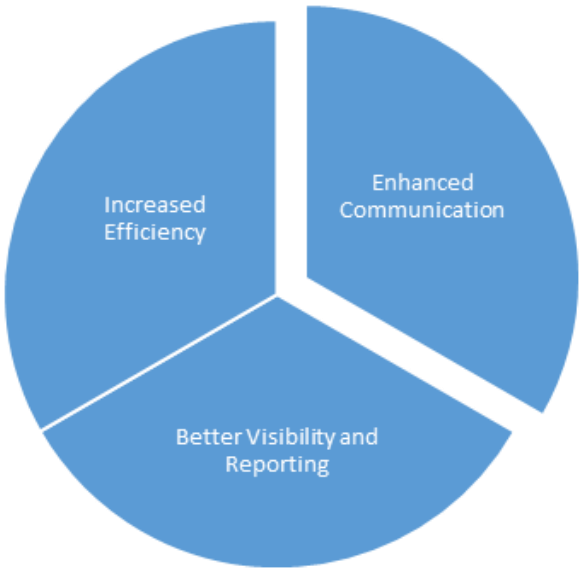

Fig 2: Benefits of JIRA-Kanban-Based Workflow Management

Effective communication is essential in any workflow management system, and the JIRA-Kanban platform significantly improves communication within teams. In traditional email-based systems, task updates and discussions are often dispersed across multiple email threads, making it difficult to track progress and maintain a clear understanding of each team member's responsibilities. JIRA eliminates this issue by consolidating all task-related communication within the platform itself. Each task card on the Kanban board includes a comment section where team members can discuss issues, share updates, and ask questions in real-time. This centralization of communication ensures that all relevant information is easily accessible and that everyone is on the same page. Real-time updates are a key feature of the JIRA-Kanban system, allowing team members to instantly see changes to task statuses, deadlines, and assignments (Ajayi and Akerele, 2022). This minimizes delays in communication and reduces the risk of misunderstandings. Furthermore, the need for constant email exchanges is greatly reduced, freeing up time for more productive tasks. Instead of waiting for email responses or manually updating team members on task progress, JIRA ensures that information is available in real-time, enabling a more efficient flow of communication.

A significant advantage of migrating to a JIRA-Kanban-based workflow system is the increased visibility it provides into task progress and team performance. The visual nature of the Kanban boards makes it easy to track the status of every task in the workflow at any given time (Okolie *et al*., 2023). Managers can quickly see how many tasks are in each stage of the process, identify potential delays, and prioritize work accordingly. This level of visibility allows for better decision-making and the ability to react quickly to any challenges that arise. Moreover, JIRA collects data on task progress, completion times, and team performance, providing valuable insights for reporting and performance analysis (Abisoye and Akerele, 2022). This data can be used to identify trends, such as frequent delays in a particular stage of the workflow, or to assess how efficiently tasks are being completed. With this information, teams can make informed decisions on how to optimize workflows and improve efficiency over time. JIRA also allows for customized reporting, making it easier to generate specific performance metrics, such as task completion rates, bottleneck occurrences, or team workload distribution (Ogbuagu *et al*., 2022). These reports are essential for continuous improvement efforts, as they enable teams to pinpoint areas that need attention and refine their processes accordingly. The transparency and data-driven insights provided by JIRA-Kanban platforms foster a culture of continuous improvement, allowing teams to iterate on their workflows and optimize performance over time.

The benefits of adopting a JIRA-Kanban-based workflow management system in industrial operations are clear. The increased efficiency brought about by faster task completion, reduced bottlenecks, and better resource allocation allows teams to work more effectively and meet deadlines with ease. Enhanced communication through real-time updates and the reduction of email reliance ensures that team members are always on the same page, leading to fewer misunderstandings and more streamlined collaboration (Adekunle *et al*., 2023). Additionally, the improved visibility and reporting features of JIRA provide valuable insights into task progress and team performance, making it easier to identify issues and opportunities for improvement. By centralizing communication, visualizing tasks, and collecting performance data, JIRA-Kanban systems significantly contribute to better workflow management and operational success in industrial environments.

2.5 Challenges and considerations

The implementation of a JIRA-Kanban-based workflow management system in industrial operations offers numerous benefits in terms of efficiency, communication, and visibility. However, like any significant shift in organizational processes, migrating from traditional email-based systems to a digital platform presents its own set of challenges and considerations (Adewale *et al*., 2023). These challenges must be carefully managed to ensure the successful adoption and sustained use of the new system. The main obstacles include resistance to change, technical integration issues, and ensuring the system's ongoing success and optimization as shown in figure 3.

One of the most significant challenges when migrating from traditional email-based systems to JIRA-Kanban is overcoming employee reluctance to adopt new tools. Employees are often accustomed to the systems and processes they have been using for years, and the introduction of a new platform can be met with resistance (EZEANOCHIE *et al*., 2021). This resistance may stem from various factors, including fear of the unknown, concerns about additional training, or a perceived loss of control over their work processes. To mitigate this resistance, it is crucial to involve employees early in the process. Clear communication about the benefits of the new system, such as increased task visibility, easier collaboration, and reduced email clutter, can help alleviate concerns. Additionally, providing comprehensive training and support ensures that team members feel confident in using the new system. This support could include tutorials, workshops, and access to help resources. Furthermore, offering a phased implementation approach where employees can gradually transition to the new system can help them adjust to the change more easily

(Okeke *et al*., 2023). Encouraging feedback from employees during the transition can also help address concerns and make the process smoother.

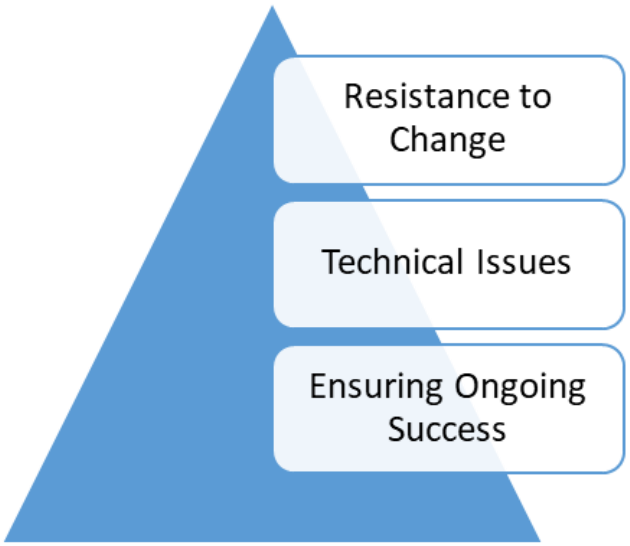

Fig 3: Traditional email-based systems to a digital platform challenge

Another significant challenge is the integration of JIRA-Kanban with existing industrial systems, such as enterprise resource planning (ERP) or warehouse management systems (WMS). In many industrial operations, these systems are integral to managing day-to-day activities, from tracking inventory to managing production schedules. Migrating to a new platform like JIRA requires that it seamlessly integrates with these systems to ensure a smooth workflow. Technical issues, such as data inconsistencies, synchronization problems, or communication breakdowns between systems, can hinder the successful implementation of JIRA-Kanban (Egbumokei *et al*., 2021). To overcome these integration challenges, a thorough assessment of existing systems is necessary. This assessment should identify the key workflows that need to be transferred and determine how they can be integrated with JIRA. Working closely with IT professionals and system integrators can ensure that the migration process is handled correctly, and any technical issues are addressed in advance. Furthermore, the customization of JIRA to fit the specific needs of the organization can help ensure that the system aligns with the existing workflows and business operations. Proper testing before full implementation is essential to detect and resolve potential integration issues before they impact the system's performance.

Once the JIRA-Kanban system has been implemented, it is crucial to ensure its ongoing success and optimization. The system will only remain effective if it continues to meet the evolving needs of the organization. Continuous monitoring and refinement of the workflow management system are necessary to ensure that it remains aligned with operational goals and provides value to the organization (Onukwulu *et al*., 2021). This involves regularly reviewing the system's performance, analyzing task completion rates, and assessing team efficiency.

Regular feedback from users is essential for identifying areas of improvement. In many cases, minor adjustments to the Kanban boards or task prioritization can lead to significant improvements in efficiency. JIRA's flexibility allows for easy modifications to the system, ensuring that it can be refined over time to meet the organization's changing needs. Moreover, ensuring that team members continue to adapt and make the most of the new platform is crucial for long-term success. This requires ongoing training and support, especially as new features or updates are introduced to the system. Encouraging a culture of continuous improvement where team members are empowered to provide feedback and suggest improvements can also help keep the platform relevant and effective. Leadership plays an important role in ensuring ongoing success (Olamijuwon, 2020). Managers should champion the use of JIRA-Kanban and encourage its use across the organization. By actively engaging with the system and demonstrating its benefits, leaders can inspire their teams to fully embrace the platform. Additionally, tracking key performance indicators (KPIs), such as task completion times, productivity levels, and team satisfaction, can provide valuable insights into the effectiveness of the system and highlight areas where further adjustments are needed.

Migrating to a JIRA-Kanban-based workflow management system offers numerous advantages, but it also comes with challenges that must be carefully managed (Basiru *et al*., 2023). Resistance to change, integration with existing systems, and ensuring the ongoing success of the platform are significant considerations that organizations must address to achieve a smooth and successful transition. By involving employees early in the process, providing adequate training and support, and working closely with IT professionals to ensure seamless integration, organizations can mitigate these challenges and maximize the benefits of the new system (Balogun *et al*., 2022; Aniebonam *et al*., 2023). Ongoing monitoring, feedback, and adaptation are key to ensuring the long-term success of JIRA-Kanban in industrial operations, leading to improved efficiency, collaboration, and overall operational performance.

3. Conclusion

In conclusion, the integration of JIRA-Kanban into industrial workflow management systems offers substantial benefits in terms of operational efficiency, task management, and communication. By transitioning from traditional email-based systems to visual Kanban boards, organizations have experienced enhanced task visibility, streamlined collaboration, and better resource allocation. JIRA's real-time updates and dynamic prioritization features allow teams to stay on top of tasks, ensuring that work flows smoothly without unnecessary delays. Moreover, the improved transparency and reporting capabilities provided by the JIRA-Kanban system have enabled better decision-making, enhanced performance monitoring, and the identification of bottlenecks and inefficiencies within the workflow. Overall, the integration of these tools has significantly improved industrial operations by reducing waste, enhancing productivity, and facilitating a more flexible and responsive work environment.

Looking to the future, the continued evolution of agile practices in industrial operations presents significant opportunities for further enhancing the JIRA-Kanban system. As industrial environments become increasingly complex, the need for adaptable, real-time management tools will only grow. One promising direction for future development is the integration of Internet of Things (IoT) and Artificial Intelligence (AI) technologies into JIRA-Kanban platforms.

IoT sensors could provide real-time data on machine status, inventory levels, or worker performance, directly feeding into JIRA boards for more accurate task prioritization and forecasting. AI, on the other hand, could enable predictive analytics, improving the forecasting of labor demand and optimizing task assignments based on historical data. These integrations would significantly elevate the capabilities of the JIRA-Kanban system, making it even more effective in managing complex industrial workflows and adapting to fluctuating market conditions. In essence, the potential for continuous improvement in workflow management using JIRA-Kanban remains vast, with evolving technologies driving more sophisticated and efficient industrial operations.

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