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Technology Implementation Strategies in Employees' Work Processes

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Abstract

Ineffective innovative technology implementation poses significant risks to an organization's stability by weakening employee engagement and productivity. Middle managers who struggle to implement innovative technology effectively may experience organizational instability. Grounded in the technology-organization-environment framework and motivation-hygiene theory, the purpose of this qualitative pragmatic inquiry research project was to identify and explore effective strategies used by middle managers to implement innovative technology into their employees' work processes to improve employee engagement and productivity. The participants were nine middle managers who had effective innovative technology implementation strategies. Data were collected through semistructured interviews and secondary data from publicly available sources. Using thematic analysis, five themes were identified: (a) instructional design and skill support, (b) evaluation and continuous feedback, (c) leadership behavior, (d) collaborative environments and psychological safety, and (e) environmental-organizational adaptability. A key recommendation is for business leaders to prioritize a human-centered perspective when implementing technological innovation. The implications for positive social change may include the potential for business leaders to enable a broader society to learn how to adapt as technological innovation advances fostering a healthier, more resilient workforce and contribute to economic stability within communities.

Keywords

Technology Implementation Strategies, Employee Engagement, Workplace Productivity, Middle Management Leadership, Job Design, Self-Efficacy, Intrinsic Motivation, Autonomy, Instructional Design, Skill Support, Innovative Technology Implementation, Operational Adaptability, Workflow Optimization, Psychological Safety, Change Resistance, Employee Engagement, Role Meaningfulness, Job Satisfaction

1. Introduction

Some middle managers do not know how to implement innovative technologies, such as artificial intelligence (AI), into their employees' work processes, resulting in reduced employee engagement and productivity. Innovation implementation is "the process of gaining targeted organizational members' appropriate and committed use of an innovation" (Klein & Sorra, 1996). Innovative technology implementation refers to the process through which an organization introduces and facilitates the appropriate, consistent, and committed use of a new or innovative technology by its intended users. The innovations highlighted by participants served distinct operational functions, including customer relationship management (CRM) databases used to track stakeholder interactions, automated reporting dashboards deployed to monitor real-time compliance metrics, custom workflow applications engineered to streamline administrative steps, learning management systems (LMS) implemented to deliver structured employee training, and electronic health record platforms utilized to coordinate bedside care. The collective impact of a healthy environment and commitment to employee well-being may be attributed to 49% of what influences workforce productivity (Banaag, 2023). Furthermore, employees who feel their managers provide opportunities for self-improvement and resources to promote efficiency are 3 times more likely to be highly productive, and twice as likely to stay with their organization (ADP Research Institute, 2025). Managers are responsible for creating work environments that are conducive to productivity to meet organizational goals and regulations, while also promoting employee well-being and growth opportunities (Koistinen & Vuori, 2024). Consequently, middle managers are concerned with capitalizing on increased task efficiencies as it impacts organizational profitability and are looking to capitalize on human-technology relationships to improve role performance and increase employee engagement.

Innovative technology implementation (ITI) should be a multifaceted approach, ensuring that both organizational goals and individuals' psychological needs are met. While productivity has increased by 40%, employees feel burned out, less trusting of their colleagues, and more disconnected from their work (Monahan & Burlacu, 2025). Technology has increased managerial oversight and decreased the need for human interaction, with 32% of employees feeling excessively supervised, which can result in judgment and a lost sense of purpose (ADP Research Institute, 2025). This results in negative perceptions in leader-follower relationships and job disengagement. Furthermore, some factors that contribute to employee well-being, such as interpersonal relationships and creativity, have been negatively impacted, suggesting a need to prioritize strategies that foster job meaningfulness and psychological safety, especially given that 49% of organizational success is attributed to factors related to employee well-being (Banaag, 2023). Thus, further research is needed to discover effective implementation strategies that provide leaders with insight to design more engaging work while improving performance.

Challenges to employee engagement drivers caused by ITI may affect workers'

sense of purpose and safety, requiring intentional action to mitigate decreased employee engagement. Employees perceive technological job displacement as a greater threat than other forms of job loss because technological innovation requires continuous upskilling (Bai et al., 2025), in turn, further encouraging organizations to use technology as a method to cut labor costs, contributing to a cycle of distrust between employees and organizations (Lakshmi Kumar et al., 2025). Nevertheless, technology is incapable of replicating the high-level cognitive functions necessary for total creativity and innovation, substantiating the continued need for human engagement (Gupta et al., 2024). This highlights the need for continued research to explore how humans and technology may effectively coexist within an organizational context. Technology improves workflow efficiency but also perpetuates feelings of distrust between employees and organizations, and humans' alienation from their roles. Accordingly, more exploration is needed to discover how the implementation of innovative technology may preserve employee autonomy, purpose, and improve skill variety, ultimately improving productivity.

Leadership plays a critical role in how employees react to technological change, directly impacting their acceptance or resistance to innovative technology. A third of organizations committed to implementing new technologies for internal communication face challenges as employee skill sets remain insufficient in comparison to the capabilities of the advanced technologies, resulting in disengagement (Workshop, 2025). Fearing replacement due to a lack of skills, employees felt distrust toward ITI (Zirar et al., 2023). A small percentage (19%) of employees report being engaged with their work, while over half (51%) are actively looking for other employment opportunities due to the failure to address core psychological conditions of employee engagement (Harter, 2025). This demonstrates that providing employees with resources and opportunities to build competency is as critical to the success of ITI as the technology itself. However, a deeper understanding of the effect of resources on employee well-being during ITI is needed to ensure that the process is both effective and profitable.

Available resources are essential for reducing stressors that may impede technology change initiatives and organizational behavior. The provision of resources and innovative technology improves employee performance (Wu et al., 2025); conversely, a lack of resources, such as adequate pay or supportive leadership, results in organizational incivility (Shin et al., 2025). Thus, the availability of resources directly impacts how employees perceive and respond to ITI. By providing adequate training and support, organizations improve employees' sense of self-efficacy and trust in the technology's overall purpose and intent of use; further demonstrating a need to establish consensus on moral standardization and protocol for ITI.

Successful ITI is dependent on leaders' ability to build and maintain trust with employees. The continuous development of new technology and its impact on human resource practices remains unknown, which exacerbates employees' feelings

of distrust. Psychological safety is threatened by the absence of clear guidelines to protect individuals from judgment or leader bias (Dong et al., 2024; Zahrani, 2024). Leaders' modeling of technology use impacts employee perception and acceptance of innovative technology (Haber & Carmeli, 2023). Ultimately, the lack of a structured approach to ITI highlights a need to establish frameworks to address challenges that arise from a lack of governance. This raises concern regarding a fundamental conflict between the potential capabilities of innovative technology and the ethical responsibility required for safe and fair use.

Leadership behaviors significantly influence employee willingness to accept innovative technology by fostering trust and enhancing the human-technology relationship. Leaders cultivate trust by demonstrating technology's practical applicability (Hussain et al., 2025) and motivate adoption by fostering acceptance behaviors and an eagerness to explore new technologies (Ab, 2024). Conversely, detached or distant leadership diminishes trust, as misconceptions about tasks and workflows result in perceived inapplicability or misappropriation of technology (Kappal & Mishra, 2024). Thus, a leader's commitment to building employee relationships and understanding workforce needs influences decision-making and the subsequent outcomes of technology implementation. Ultimately, the effectiveness of ITI relies on the perception of usefulness that is shaped by human behaviors and influences.

The absence of a structured approach to implementing innovative technology presents a challenge in demonstrating the balance between leveraging technology's capabilities and upholding ethical responsibility. For example, while language models are used to effectively process and interpret electronic health records, improving results by 9.6% (Yang et al., 2022), distrust and disparities resulting from bias and ethical ambiguity have increased in areas such as mental health disorder detection and treatment (Olawade et al., 2024). Although innovative technology has provided opportunities for groundbreaking discoveries that have improved efficiency and productivity, a lack of ethical safeguards remains. Therefore, additional research will provide a framework for building common practices and structures for ethical protocols of technology implementation, allowing organizations to mitigate risks and promote organizational trust.

Existing research has examined the distinct impacts of motivators and hygiene factors on technology adoption. While hygiene factors such as environmental influences effectively mitigate negative perceptions and decrease resistance to new technology, they do not generate enthusiasm for adoption (Gao et al., 2024). In contrast, the desire for employees to maintain autonomy is essential for generating enthusiasm and receptive behaviors toward innovative technology (Bai et al., 2025). Despite these insights, a significant gap in knowledge remains in understanding which specific motivators have had a greater impact on successful technology implementation. Additionally, there is little guidance on how leaders can strategically leverage hygiene factors to maximize their impact to foster more effective ITI regarding efficiency and employee engagement.

2. Literature Review

The strategic adoption of innovative technology enhances organizational performance by establishing standardization and inoperability, which improves efficiency, productivity, and organizational sustainability. This efficiency is reflected in the customer experience, where ITI is a critical factor in the shift towards organizational servitization. The business model where product-focused organizations incorporate services across a product's lifecycle is essential for meeting market demands, increasing customer engagement and loyalty, and enhancing competitiveness. Ultimately, ITI enables the scaling and personalization of service offerings while enabling organizations to enhance their social responsibility and sustainability efforts.

The successful adoption of ITI leverages human resource outcomes. This is accomplished through enhanced and personalized training, which builds employee self-efficacy and engagement, and improves communication efforts that promote a sense of meaningfulness. Effective implementation also requires strategic, phased integration supported by strong leadership that is committed to fostering a collaborative culture.

Ultimately, supportive leadership and an empowering culture must address the psychological needs of the workforce. Leaders may leverage ITI to cultivate employee self-efficacy, enhance psychological safety, and promote intrinsic motivations by aligning technology application with organizational values. This holistic approach to ITI builds trust, influencing employees to fully embrace and successfully adopt the new technology, thereby enhancing the organization's competitive advantage.

2.1. Organizational and Operational Outcomes

Standardization of business practices using technology enhances both development and operational outcomes. Establishing interoperability through consensus enhances the reliability and effectiveness of innovative technology (Zhang et al., 2022). This was demonstrated by healthcare institutions that have improved technology adoption and patient care by ensuring interconnectivity among different platforms and institutions through aligned protocols and system configurations (Kim et al., 2023). Effective implementation of innovative technology provides multifaceted benefits, allowing users to leverage the utility of technology both internally and externally. The reliability and consistency gained from standardization enhance technical efficiency, which ultimately improves outcomes such as productivity and organizational sustainability (Wang et al., 2023).

Innovative technology plays a central role in achieving sustainability and efficiency. For example, the Internet of Things (IoT) is utilized in Bulgaria to develop strategies for restructuring energy sources and the monitoring of environmental factors, such as air quality and carbon emissions (Vankov & Lukarev, 2025). Further, socio-tech is used to design Sustainable, Innovative, and Affordable Housing (SIAH), which successfully reduces both material usage and carbon dioxide emis-

sions (Moghayedi et al., 2023). By leveraging technology, organizations can improve operational efficiency and address social and environmental challenges. Thus, providing the ability to improve business processes that impact social outcomes.

Furthermore, sustainability efforts are enhanced by using technology to streamline workflows and supply chains. Agri-food companies utilize blockchain technology to connect cross-departmental operations, enhance decision-making, and improve resource management (Apeh & Nwulu, 2025). While industrial markets have used technology to minimize production waste and utilize reusable energy sources, ultimately reducing their carbon footprint (Mahmood et al., 2025; Wu et al., 2025). Innovative technology has allowed organizations to streamline processes and enhance their efforts toward social responsibility, reducing production costs (Oliveira-Dias et al., 2025). Ultimately, innovative technology can be leveraged to develop cost-efficient and sustainable organizational performance, significantly enhancing a competitive advantage (Wu et al., 2025). By aligning the use of innovative technology with the purpose of social responsibility and sustainability, organizations can ensure applicability and ethical use while meeting overarching organizational and strategic goals.

Organizations are able to leverage innovative technology to enhance communication efforts, improving workflow and resource efficiency. Leaders may provide employees with real-time data and feedback that provides insight into their impact on business outcomes, strengthening their sense of job meaningfulness (Lukić Nikolić, 2024). Further, crowdsourcing platforms are used to improve response times among team members, enhancing cost efficiency in delivery times and costs associated with rushed mailing occurrences (Cammarano et al., 2025). Similarly, communication teams on offshore ships leverage innovative technology to send communications 29% times faster, ultimately improving overall communication efforts by 15% (Sun et al., 2025). These demonstrate the significant impact innovative technologies have on communication efforts, thus allowing organizations to improve operational efficiency. Ultimately, leaders are able to impact psychological factors and operational processes that ultimately improve productivity and profitability.

As technological innovation drives global market expansion, organizations increasingly leverage technology to enhance the scalability of their operations. Expanded access to products and services also generates data vulnerabilities, driving organizations to leverage innovative technology as a countermeasure to enhance data security (Paya et al., 2024). With large amounts of sensitive information to manage, technology like blockchain or cloud services enhances the scalability of data protection without sacrificing operational efficiency (Sepehrian et al., 2025). Effective technology facilitates complex operational goals, such as data security, making them manageable and achievable. Thus, technology can significantly impact the organization's ability to manage on a larger scale of volume, velocity, and variety of information, enhancing organizational performance.

While technology enhances the scalability of organizational performance, the extent to which it does so is significantly influenced by the strategic alignment of technology integration with organizational goals. Small-scale changes driven by technology are often more impactful than bigger projects, offering deeper motivation on an individual level (Anantharajah, 2025). Furthermore, as initiatives become more complex, the risk of failure due to challenges such as government regulations or stakeholder biases increases, impeding the effectiveness of change initiatives (Roy et al., 2024). Consequently, initiatives that are more manageable are often more effective. Therefore, by ensuring that ITI is strategically phased, organizations can take actionable steps to enhance the successful adoption of innovative technology.

2.2. Change Management Leadership

Leadership behaviors and a commitment to fostering a positive workplace culture have a significant impact on psychological factors that influence the effectiveness of ITI and its successful adoption. While leaders are generally more accepting of technical change, limited ethical guidance generates a fear that leads to a negative perception of technology and resistance (Hong et al., 2025; Shahid et al., 2024). Task-oriented leadership is an effective approach to mitigating resistance toward technology integration (Li et al., 2023). However, successful technology implementation strategies also include prioritization of fostering interpersonal relationships as a mediator to emotional exhaustion, perceived lack of professional efficacy, and cynicism caused by technology burnout (Macias-Velasquez et al., 2021). Leadership that contextualizes the use of innovative technology and embeds it into social constructs of the workplace improves the perception of technology, thus enhancing the effectiveness of implementation. Thus, a strategic leadership approach during the implementation of innovative technology can significantly enhance the perceived usefulness, safety, and resourcefulness of the technology.

ITI strategies that focus on ensuring technical alignment with organizational values directly influence user confidence in both the technology and leadership, thereby enhancing the effectiveness of technology integration. Confidence is enhanced through corporate social responsibility (CSR) while integrating innovative technology, which fosters trust and mitigates organizational incivility (Shin et al., 2025). The overall alignment of organizational values and technology use subsequently increases employees' willingness to share expertise across the workforce (Neukam & Bollinger, 2022). Thus, the behavioral outcome of knowledge sharing and collaborative environments is significantly influenced by leadership's demonstration of trustworthiness. Ultimately, establishing employee trust mediates organizational adaptability, consequently equipping the workforce with the desire and skills necessary to fully adopt innovative technology and enhance the organization's competitive advantage.

Innovative technology significantly impacts organizational productivity by enhancing training and professional development. Human resource professionals

may design personalized training based on an individual's previous experience, making training more relatable (Srivastava & Pandita, 2024). Additionally, nurses report feeling a higher sense of self-efficacy after training and technical integration into work processes (Alshammari & Alenezi, 2023). Leaders are able to design more effective training experiences by leveraging innovative technology, ultimately improving employee engagement and overall productivity. This underscores how leaders may impact human cognitive functions through the use of innovative technology to improve performance outcomes.

2.3. Individual-Level Psychological Factors

The effective use of technology to enhance social connectivity impacts user experience within work roles and, consequently, influences performance outcomes. Leaders who prioritize and demonstrate commitment to collaboration and human connection through social acceptance behaviors foster employee self-efficacy, psychological safety, and meaningfulness (Richards et al., 2025). Individuals who feel supported by peers and leadership experience higher levels of perceived self-efficacy, become more motivated toward skill development, and are receptive to knowledge sharing (Mehner et al., 2025). Thus, collaborative environments foster growth mindsets and increase organizational knowledge. Ultimately, the motivations inspired through social connections may be leveraged by leaders to significantly impact performance metrics.

Strategies employed during organizational technology change influence the perception of role meaningfulness, and consequently, the effectiveness of innovative technology. Communication technologies can be leveraged to mitigate the lack of human connectivity in virtual or hybrid work environments, promoting psychological safety through interpersonal relationship building (Rojas et al., 2025; Vegter et al., 2025). Further, contextual awareness may be gained through collaboration, which enhances feelings of relatedness, reduces the sense of loneliness, and mitigates stress-related fears associated with technology adoption (Aleksić et al., 2024; Lukić Nikolić, 2024; Omonov & Ahn, 2025). The combination of psychological safety and contextual awareness results in higher levels of intrinsic motivation, self-agency, and engagement, enabling employees to be more innovative and willing to adopt new technologies. Therefore, intrinsic motivation, mediated by perceived purpose, becomes a significant factor that facilitates the successful integration of innovative technology.

Training goals and strategies influence an individual's self-efficacy during the implementation of innovative technology, consequently impacting overall effectiveness. Learning experiences are enhanced by incorporating soft skills and interpersonal skills along with technological skills through tailored teaching approaches (Carvalho et al., 2024). This requires managers to possess and commit to developing more than just task-oriented skills for employees, building self-efficacy holistically, as it moderates between feelings of insecurity or enthusiasm and enjoyment when using technology (Alanazi & Al-Zahrani, 2025; Wang & Yao,

2025). Managers can enhance training by ensuring that technical competence and confidence are cultivated. Ultimately, by cultivating self-efficacy among employees, managers foster a workforce culture that is more receptive and more likely to successfully adopt innovative technology.

Leveraging innovative technology significantly impacts organizational productivity by promoting creativity and improving decision-making processes. In communities that prioritize collaboration and group goals enhance social cohesion and problem-solving, resulting in more innovative solutions (Xavier & Korunka, 2025). Further, technology may be used to enhance transparency and accountability, allowing for more strategic and effective resource allocation (Suhardjo & Faisal, 2024). Integration of innovative technology directly improves leadership skills and problem-solving abilities. This, in turn, strengthens collaboration and ultimately, organizational productivity. The application of innovative technology, when balanced by employee autonomy and collectedness, generates enhanced motivation factors and consequently drives sustained role performance. The self-determination theory (SDT) posits that perceived competence, autonomy, and relatedness foster intrinsic motivations that enhance task outcomes (Deci et al., 2017). Additionally, an individual's I-positions, or self-identity in relation to work roles and coworkers, directly impact their receptivity to innovation (Henry, 2025). The effective use of technology may be mediated by the alignment with an employee's sense of self and purpose. Thus, the combined effect of intrinsic motivation and I-positions may drive the use of innovative technology by fostering autonomous motivations while cultivating core psychological needs for autonomy, competence, and a sense of belonging.

2.4. Theoretical Framework

Tornatzky and Fleischer's (1990) technology-organization-environment (TOE) framework and Herzberg et al's. (1959) motivation-hygiene theory was the lens through which the research phenomenon was viewed. The TOE framework has three primary constructs—technology, organization, and environment, each used to categorize factors that influence the effectiveness of innovative technology implementation (ITI). The framework was expanded by Satyro et al. (2024) to include the exploration of societal impact, allowing leaders to further determine the impact of ITI on organizational sustainability. Manufacturing organizations employ the framework to determine the profitability of Industry 4.0 technologies such as Internet of Things (IoT), cloud computing, and artificial intelligence (AI) (Zhong & Moon, 2023). Some leaders used the TOE framework as a structured method for assessing the effectiveness of ITI. Some Nigerian executives of service-centered small and medium enterprises (SMEs) used the framework's constructs to base their decisions on incorporating enterprise resource planning software (Awa et al., 2016). As a systemic method for evaluating and determining ITI effectiveness, the TOE framework offers leaders a strategic approach for analyzing core factors that influence a firm's productivity on multiple levels (**Figure 1**).

Herzberg et al.'s (1959) motivation-hygiene theory aligns with the TOE framework by identifying core drivers that improve job satisfaction and mitigate job dissatisfaction. The core drivers of this theory are motivators, obtained through work-related rewards such as meaningfulness, autonomy, recognition, and skill development; the second driver is hygiene factors that provide structure and a well-managed organizational culture (Herzberg et al., 1959). Organizations continue to use the theory's constructs for deliberate job design to improve employee engagement and job performance (**Figure 2**).

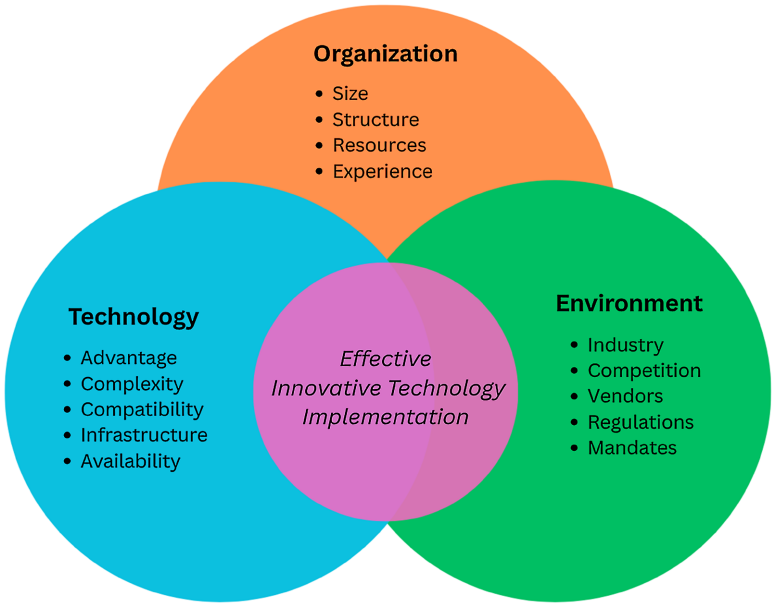

Figure 1. The Technology-Organization-Environment (TOE) framework.

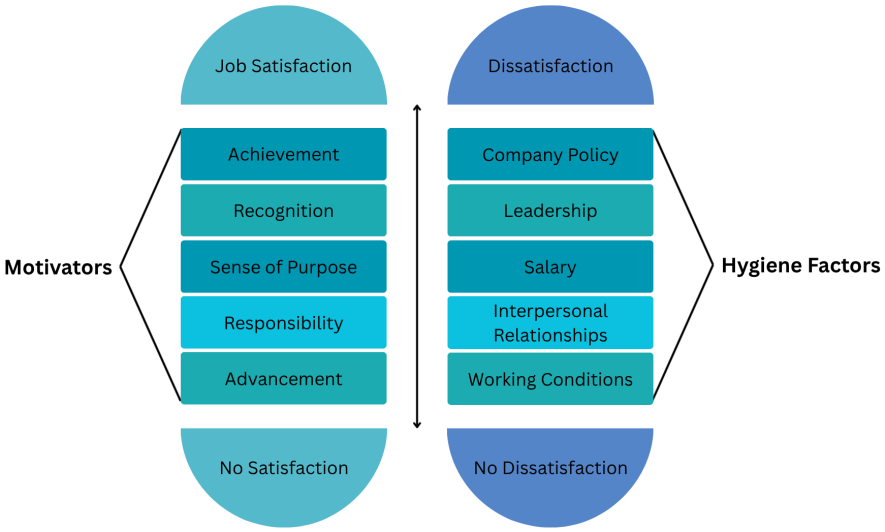

Figure 2. Motivation-hygiene theory.

3. Methods

A qualitative pragmatic inquiry research method and design were used to explore

the complexities of human-technology relationships within the workplace. Strategies employed by middle managers significantly influence employees' perception and adoption of innovative technology, thus impacting performance and employee engagement (Tornatzky & Fleischer, 1990). The qualitative research approach was appropriate as it provided the opportunity to understand the impact of leadership behaviors by using contextual grounding to explore individual perspectives and experiences (Rouse et al., 2025). Further, the pragmatic inquiry research design was employed to provide a strong framework for integrating theory with practicality.

The target population comprised nine middle managers in the U.S. service sector who had successfully implemented innovative technology into their employees' work processes to enhance employee engagement and productivity. The inclusion criteria comprised three intentional steps: 1) had a LinkedIn presence detailing their name, and role; 2) responded with interest in taking part in the research, and 3) indicated successful outcomes relative to the research topic in response to qualifying question. The sampling method was purposeful. Participants were recruited through email invitations, LinkedIn, professional associations, and professional networks. Once a candidate participant responded to the invitation, dialogue was initiated with them to establish a relationship conducive to conducting objective research. This entire process took five months to complete. Data were collected through semistructured interviews involving business-related low-risk topics, public internal communication trends report and published industry reports. The secondary data collected, public internal communication trends report, performance metrics and outcomes report, and published industry reports, were selected and reviewed because they showed trends and outcomes as they related to innovative technology used in employees' work processes to improve employee engagement and productivity. The data were triangulated and coded with the other data and used in the theme development process. Participants were informed that participation was voluntary, that they could exit the process at any time simply by emailing their desire to do so. They were informed that no incentives would be offered and signed and returned an informed consent form detailing the purpose, risks, and responsibilities involved in the research process, prior to being interviewed. An interview protocol was employed to ensure consistency across the interviews.

Data organization techniques, like maintaining research logs and reflective journals, standardizing file naming conventions, folder structures, and labeling systems, were vital for effective qualitative data analysis. The reflective journals were useful to reference when interpreting the data. They were referenced to remind the researchers of any biases that may have existed to avoid including them in the interpretation of the data. The journals also provided notes taken during the participant interviews that were useful during the interpretation process. The primary researcher initially coded the data; the secondary researcher then reviewed the same data and independently coded the data. There was discussion about the out-

comes and then a few adjustments were made as a result. MS Excel and MAXQDA software tools were utilized to catalog and verify the thematic analysis process. The data analysis process followed an approach using Braun and Clarke's (2013) six-step thematic analysis framework to systematically review the records, generate initial codes, search for themes, define and name themes, and produce the final report.

4. Results and Discussion

Five distinct themes emerged from the analysis of data: a) instructional design and skill support, b) evaluation and continuous feedback, c) leadership behavior, d) collaborative environments and psychological safety, and e) environmental-organizational adaptability. Table 1 outlines the major themes, the representation of each theme across participants, and the total coding frequencies.

Table 1. Major themes and references.

Major themes	# participants referenced theme	# references to theme
Instructional design and skill support	9	16
Evaluation and continuous feedback	9	15
Leadership behavior	7	19
Collaborative environments and psychological safety	9	26
Environmental-organizational adaptability	9	34

Note. The code frequency count refers to the number of times the participants mentioned a concept associated with each major theme during the interviews.

4.1. Theme 1: Instructional Design and Skill Support

The first major theme that emerged from the analysis was instructional design and skill support. Analysis of the interview data revealed that targeted training and procedural frameworks, including needs-based training, phased rollouts, and standardized operating procedures, were consistently described by middle managers as necessary for building technical competency and reducing resistance. According to the survey findings by Workshop (2025), an internal communication trends report, technology rollouts lacking clear communication and intentional upskilling efforts risk outpacing workforce capabilities, leading to employee disengagement. One hundred percent of the participants cited instructional design and skill support initiatives as a critical component of effective innovative technology implementation strategies. These strategies included simplifying multi-step guides, designing customized learning experiences, and establishing iterative rollout phases to reduce cognitive fatigue, and creating visual flowcharts or SOPs outlining day-to-day procedures.

The narratives focused on providing customized hands-on learning structures to accommodate diverse technical aptitudes. Teaching methods were adjusted to

fit learning speeds and age demographics. Participant 4 highlighted customized educational modeling, stating the value of "being hyper-cognizant of the different generations that are in the workplace" and "meeting with them one on one and kind of like going through, like, what they need." This approach was demonstrated by Participant 5, who emphasized "a lot of consulting for elders that are anti-tech." Participant 3 focused on individual coaching loops to reduce isolation, providing "ongoing support, like being right there one on one, teaching them step by step; like modeling exactly what needs to be done." Restructuring training to meet individual needs significantly reduced user resistance and fostered self-confidence.

Participants described structuring implementation plans using deliberate, incremental timelines to reduce immediate resistance. Participant 9 detailed how slowing down the rollout cadence improves concept retention, explaining that success involves "…spending a little bit more time on it, taking a step back, peeling back the layers a little bit…and just being able to go a little bit slower and not operating at, like, fast pace…". Participant 2 stated, "I went ahead and allowed each phase to be independent from one another, but it was a solid one phase per quarter." Participant 5 observed that when technology is "slowly integrated it into their everyday, they slowly caught on and actually start…pushing it and talking about it more amongst colleagues and different departments." Thus, buy-in and advocacy is generated when employees gain a sense of competency. This is achieved by allowing workers to gain confidence in independent blocks and successfully integrating innovative technologies into daily work routines.

These instructional strategy structures were supported through standard operating procedure documentation. Participant 6 explained clear procedural materials keep workflows consistent, advising managers to "create flow charts to help…with processes. So, creating a flowchart helps…to visualize where something starts and where it finishes." Participant 8 highlighted "the development of uh standard operating procedures, just ensuring that as people are working in these different systems that there's some uh generally understood and um integrity-holding... way that people are engaged in in the processes, and SOPs have been a been an excellent tool." Participant 7 validated that operational references impact employees' I-positions, explaining the goal focuses on "creating a better manual for your organization that helps newer employees or newly personnel, team members, navigate those same conflict and changes that was previously received."

The findings support both the technical and organizational dimensions of the TOE framework and the core assumptions of the motivation-hygiene theory. The TOE model shows perceived complexity and compatibility influence adoption behaviors (Tornatzky & Fleischer, 1990). Also, the motivation-hygiene theory outlines that structured personal development, professional growth, and skill development function as primary intrinsic motivators that drive job satisfaction (Herzberg et al., 1959). Thus, standardized instruction acts as a primary organizational tool. However, it is more effective when simplifying system complexity, promoting microlearning and phased rollouts, and offering deliberately designed needs-

based supports. The strategies confirm that structured technical training directly enhances self-efficacy and job satisfaction (Alshammari & Alenezi, 2023; Srivastava & Pandita, 2024). This provides a practical framework showing middle managers can significantly enhance technical adoption by translating technical demands to match organizational capacity. Together, these training designs and skill support strategies ensure consistent operational behaviors, enabling effective evaluation of performance outcomes through transparent and continuous feedback and objective performance scaling.

4.2. Theme 2: Evaluation and Continuous Feedback

The second theme was evaluation and continuous feedback. The ADP Research Institute (2025) reported that providing employees with constructive feedback and avenues for self-improvement significantly enhances workforce retention outcomes. Analysis revealed that evaluation strategies such as objective performance scaling, qualitative feedback sheets, automated platform metrics, and motivational reward reinforcements were described by middle managers as necessary for tracking data quality, confirming user comfort, and rewarding performance. One hundred percent of participants cited evaluation and continuous feedback initiatives as a significant factor of effective ITI. These strategies included analyzing system-generated activity logs, distributing pre- and post-training surveys, conducting structured checklist reviews, tracking compliance corrections, and linking milestones to performance incentives.

Objective metrics and collaborative milestone tracking were prioritized to gauge implementation success without creating surveillance or anxiety. These strategies served as a supportive tool to identify processing gaps and guide learning opportunities. Participant 2 described this, sharing: "We found the software that we went with had embedded metrics in the system... once the 30 days were up and the lessons were complete and the questions that were given were also answered, there was a database that was sent out, a report that was sent out to me that shared with me." This automated tracking shifted evaluation away from subjective supervisor observations onto clear, unbiased platform logs. Participant 6 balanced the quantitative approach with employee led metric tracking strategies, stating, "I let the employee decide what they want those smart goals to be, and we measure the effectiveness of their smart goals... we will reflect back on these smart goals that we set in January at the end of the year in our December meeting." Participant 7 maintained "every task, and every organization process should have a timeline of completion," adding that publishing a concrete calendar "helps with any innovation on knowing when completion is arriving for any task." Establishing progress to deadlines enables individualized measurement of success. Commitment to operational transparency extends to performance appraisal processes.

Transparent evaluation rubrics were utilized as developmental touchpoints, rather than just subjective performance reviews. Participant 3 described how audits using checklists were utilized, explaining, "We had feedback sheets... when they

go in to do supervisions each week, then they would complete a feedback sheet. It's like a checklist to make sure that certain points were being checked off... if you scored a '1', then you needed some work. Two means that you understand it, but you just need a slight amount of work. And then, three means that you're really good at what you're good at." This mechanism allowed supervisors to evaluate efficiency improvements. Participant 8 shared that they "measure the number of e-forms that have been adjusted as well as identifying the compliance issues that arose or that could have arisen but have been mitigated." Teams navigating tasks connected to compliance mandates require tracking and concrete metrics. Participant 5 demonstrated success through standard departmental logs, stating, "Our readmission rates dropped to like three percent with the incorporation of that app... we measured it by the readmission rates." Integrating structured tracking tools and clear evaluation rubrics ensures that performance monitoring offers iterative developmental opportunities, thus translating ITI efforts into verifiable operational outcomes.

The narratives revealed the practice of combining automated tracking and post-implementation support mechanisms to monitor comfort and reinforce operational behaviors. Participant 4 noted that tracking user sentiments after implementation confirms authentic change, sharing, "We did pre- and post-training surveys just to kind of see their comfort levels... I was able to see that they felt much more comfortable with the systems and the databases post-training, especially the ones who were very hesitant at the beginning." Participant 9 highlighted this, stating, "…I'm not getting as many Teams messages or questions about the CRM or the technology we engage with as much anymore... people are kind of, either, getting to a place where they can figure it out or, you know, we're setting time aside in our one-on-ones to do it together." To secure technical behaviors, Participant 3 advised celebrating mastery directly to employee motivators, explaining, "if you can complete three of these 10 trainings within a week, then we get a party, we get a bonus... we start getting incentives for doing bits and pieces of it leading up to the final product." Continuous evaluation and support enable leaders to identify and reinforce performance and operational independence. By pairing metric tracking with targeted incentives and supportive feedback loops, managers fulfill psychological needs for competence and relatedness, reducing adoption hesitation and fostering autonomy. This combination ensures innovative technology is fully embedded into daily workflows, enhancing technological sustainability.

The findings support the assumptions of the motivation-hygiene theory, which posits that direct recognition, personal achievement, and objective feedback are vital intrinsic motivators that drive job satisfaction (Herzberg et al., 1959). Further, leaders foster desire for competence by utilizing transparent performance metrics to show gains and reward achievements, boosting employee engagement (Akgul et al., 2025). The TOE model states that evaluating internal resource outputs is critical for verifying the actual relative advantage of innovative technology

(Tornatzky & Fleischer, 1990). Using innovative technology to provide transparent feedback loops and automated process tracking strengthens institutional accountability and employee output (Wang et al., 2024). Organizations benefit from shifting toward automated, algorithmic performance management systems to standardize evaluation (Suhardjo & Faisal, 2024). Conversely, fully automated tracking systems lead to degraded psychological safety and increase events of technology rejection (Dong et al., 2024). Therefore, a balanced approach is appropriate, utilizing human-centric approaches, such as internal check-ins, balanced with automated platform analytics to generate sustainable technology adoption and meet market productivity standards. Integrating automated platform analytics with qualitative metrics allows evaluations and continuous feedback to humanize the scaling process and performance expectations of ITI.

4.3. Theme 3: Leadership Behavior

The third major theme was leadership behavior. Gallup research highlights that team engagement is directly connected to leaders' intentional efforts to cultivate supportive and psychologically safe work environments (Harter, 2025). Transcripts demonstrated interpersonal management approaches were highlighted by participants as drivers for mitigating resistance. These included strategies such as operationalizing a human-first approach, intentional leadership accessibility, demonstrated leadership competency, and proactive relationship building. Interestingly, 77.8% of participating middle managers generated data supporting this specific thematic framework. While the previous four themes achieved absolute convergence of 100%, this variation does not diminish the structural importance of the theme, as it reflects a highly individualized nature of interpersonal management styles. A thorough analysis evaluated theme adequacy, convergence, and disconfirming accounts. Therefore, these leadership behaviors, including skill modeling, time blocking for providing direct support, effectively communicating, and rebuilding historical trust gaps between leadership and workers, confirm that intentional cultivation of a supportive relational climate remains a primary strategy used by middle managers to reduce resistance and enhance innovative technology implementation.

The data revealed that middle managers prioritize a supportive, empathetic, and highly relational managerial style to foster the psychological well-being of their staff, focusing on understanding individuals holistically. Participant 3 detailed this human-first management style, explaining that leaders must "understand people for who they are, build that relationship so that we can understand how their environment, their personal environment, their work environment, their professional environment, will affect how their behaviors are being seen." Participant 6 supported this leadership approach, stating, "I care about you as a person. You as a person means more to me than you as an employee," noting that authentic advocacy involves recognizing personal milestones because "as human beings, you know, hearing your name and seeing a congratulations…well done,

that goes a long way"; also, supporting individual team member development "whatever it is that you want to invest in, I support…my team knows that they are well supported in all of their endeavors." Participant 9 highlighted the necessity for leadership to avoid the tendency to step in and take over, warning against the "classic like trap that a manager will fall into is like, 'I can just do it if it's…like, I'll just do it, it's faster because I know how to do it'", and emphasized that "we need to be able to scale genuine human connection," by allowing employees to "grow in the spaces they want to be fluent in" and understanding that "it takes time to learn." Participant 6 sums effective human-first leadership to actively supporting individual learning capacities, stating never to judge "someone's performance on one bad day", and supporting individual development.

The participants recognized that ITI requires leaders to scale genuine human connection and model emotional vulnerability to reduce staff isolation. Participant 9 detailed the need to "be able to scale genuine human connection" and utilize technology to reduce workload, enabling leaders to focus more on mentorship, and argued intentionally avoiding managerial impatience to operate entirely from a posture of grace, sharing, "I think my patience was wearing thin from them or anything they were doing, but like my life circumstances of having a toddler... and then I need to be able to bring that to my work life as well, right? It can't just be reserved for certain aspects of my life. And so, I think to kind of work on that... truly like starting every day and be like, 'I'm going to operate from a place of grace.'" This posture enables leaders to evaluate the "why behind why we're doing it, not just what," and guide their teams toward self-sufficiency. Participant 5 leveraged shared vulnerability to reduce resistance, recalling, "I was pretty vulnerable with them. And you know, I explained to them…I don't like new things either." By acknowledging their own challenges, the participants established a psychological commonality. This validation of employees' discomfort fostered trust and created a collaborative foundation. These narratives demonstrate that redirecting leadership efforts toward scaling genuine human connection impacts employee perceptions during ITI. Ultimately, intentional leadership that demonstrates patience and vulnerability fosters a culture of commonality, thereby enhancing organizational trust and implementation of innovative technology.

Supportive cultures may be operationalized by ensuring leadership accessibility. Participant 7 noted the direct correlation between availability and user confidence, explaining "the more assistance that can be provided through technology change, the more comfort is created." To make this support practical, Participant 9 made a conscious decision to shift from routine tasks to ensure more time was given to their teams, stating, "I'm also going to take the time…people need me. I need to pick a number that I'm okay with leaving my inbox because I need to take dedicated time to being a manager and being a teammate, if you will, at the end of the day." Participant 1 emphasized the need "to lead with visibility, not just with emails... I would try to manage a challenge from my office. I'd go out and communicate better to understand what the challenges might be there", demonstrating vis-

ibility as a strategic communication practice. The data demonstrate that middle managers actively operationalize supportive workplace cultures by prioritizing direct leadership accessibility over routine administrative tasks. Ultimately, this active managerial availability cultivated collective trust and enhanced psychological safety, thereby mitigating ITI resistance.

Based on the data analysis, a heavy emphasis was placed on demonstrating leadership competency and leading by example. The participants focused on modeling proper system usage behaviors. Participant 5 highlighted this, stating, "I think the number one thing to do is model it, and so I can't necessarily ask them to do something that I am not using." Participant 2 supported this, describing significant personal preparation well ahead of system deadlines to ensure the team had a reliable guide, sharing, "I went through every bit of training for weeks prior to the pre-launch. And then I got the HR team up to speed with the platform as well prior to meeting with staff." Establishing mastery of new technology prior to rollout, the participants ensured they could provide clear information early and effectively support during implementation. Participant 7 confirmed that a leader's level of technical aptitude is vital for problem solving, noting "the more I know, the more I'm able to share, which helps them navigate through their daily processes and their daily procedures." Thus, visible mastery was demonstrated, creating a supportive operational environment in which employees can confidently rely on their lead as an active teammate rather than a detached enforcer.

Ultimately, the participants described using these supportive behaviors to foster intentional relationship building and repairing trust gaps within their organizations. Participant 2 highlighted that technology rollouts often stall due to cultural divides as opposed to system errors, explaining "There were some historical trust issues between support staff and core staff towards administrative staff. One thing we knew we needed to do was create a level of trust prior to trying to present for buy-in." Participant 6 directly addressed organizational challenges during implementation, sharing "The first critical step is to create rapport with those direct reports and to create a climate that is trustworthy and trust-building. Um, so that was my first hurdle… Each of the direct reports already had assumptions about me as their new supervisor, and so with that, I had to help kind of dispel some of those myths." Participant 6 described a two-way process of accomplishing this, requiring ongoing commitment to transparency and mutual accountability, stating, "I'm gonna be very upfront and very transparent with you about who I am," and concluding "trust is always going to be a two-way streets, so not only did I have to earn their trust. I'm also trying to, um, to make sure that I trust them, too." The data reveals that middle managers leverage supportive interpersonal behaviors to intentionally build rapport and repair historical trust gaps within their organizations. Further, this demonstrates that ITI initiatives are impacted by cultural divides, and that cultivating an environment of transparency and mutual accountability reduces preconceived assumptions and secures buy-in.

Collectively, these narratives confirm the assumption that supportive leader-

ship behaviors, social networks, and positive working conditions operate as a primary hygiene requirement. Low team engagement is frequently tied to administrative failure to satisfy fundamental psychological conditions (Harter, 2025), and top-down, non-relational instructions act as a severe hygiene drain (Herzberg et al., 1959). Further, fostering a supportive workplace culture influences individual-level adoption outcomes, demonstrating that an organization's internal managerial structure and cultural readiness determine how effectively an innovative tool is integrated (Tornatzky & Fleischer, 1990). Thus, the data prove that when middle managers model vulnerability, ensure frontline accessibility, and actively repair team trust, they satisfy baseline psychological criteria needed to reduce anxiety and resistance. These insights show that cultivating strong leadership and employee relationships mitigates stress while enhancing ITI efforts. Ultimately, these findings support that an organization's cultural intuitiveness and relational climate are primary determinants of how effectively innovative technology may be implemented into operational workflows.

4.4. Theme 4: Collaborative Environments and Psychological Safety

The fourth theme was collaborative environments and psychological safety. The theme comprised elements such as relationship-driven techniques, safe learning spaces, shared leadership structures, peer partnerships, and listening loops, which were emphasized by participants as critical for reducing stress and cultivating trust. One hundred percent of the interviewed middle managers supported this theme. Gallup research indicates that more than 50% of employee turnover stems from workplace environments that fail to fulfill core psychological needs (Harter, 2025). Conversely, cultivating positive human interactions within the workplace strengthens an employee's sense of purpose (ADP Research Institute, 2025). Strategies consisted of hosting weekly operational think tanks, establishing advisory boards, mobilizing early adopters, and normalizing technical exploration.

Participants described an intentional social process focusing on mitigating stressors by establishing secure learning spaces. Participant 1 addressed psychological barriers, noting "…maybe the fear of looking incompetent comes up", and counteracting this by empowering employees to "feel safe to make mistakes, to feel safe to be honest [about] how they're feeling." Environments for hands-on guidance were established. Participant 2 highlighted setting up protected spaces to resolve basic troubleshooting, explaining "…there needed to be a dedicated space for all staff members…", specifically mentioning how it was "challenging for multiple of the staff to just get online and be able to create the login. So, that was another portion of handholding or guiding, or making sure we provided the appropriate support". Participant 3 summarized this role as "helping them to understand that they have a lot of support throughout this process", while Participant 7 noted "the more assistance that can be provided through technology change, the more comfort is created," indicating hands-on managerial support

serves as a primary driver of user readiness.

To minimize pressure and build trust, some managers strategically altered physical settings, hosting sessions away from traditional spaces and choosing neutral environments. Participant 5 stated, "I create a space that's away from that org... usually, I choose a library or things like that to incorporate community in that." Safe learning environments rely on open dialogue and clear frameworks that empower employees to guide their learning paths. This supports employee engagement, mentioned by Participant 6, stating, "there's never a bad question that can be asked during these sessions... And so, we encourage everybody on the team to ask that question." This shows a direct correlation between managerial support and employee comfort. Leaders create a sense of safety that empowers employees to feel more confident and fosters psychological safety required for genuine engagement with innovative technologies by intentionally separating training from everyday pressures of the standard workspace.

Middle managers prioritized listening sessions to gain insights, reduce role alienation, and co-create competency building opportunities. Participant 6 illustrated this, stating it is "really important for us to sit down as a team, and to go around the table and say what's on your mind. What do you have trouble with? What's going well?" Participant 2 separated mandatory requirements, explaining, "I would hold a discussion session where it was purely voluntary if anyone wanted to show up and voice concerns or share thoughts on how they thought their lessons went, or just simply sit in and share feedback on a takeaway that they got…". Leveraging these conversations enabled participants to establish mutual respect across different levels. These narratives confirm the core assumptions of the motivation-hygiene theory, which holds that supportive supervisor behaviors, peer-to-peer social networks, and positive working conditions serve as primary hygiene factors to ensure the effectiveness of technology change initiatives. Fostering collaborative learning environments and removing the fear of retaliation prevents workplace dissatisfaction (Akgul et al., 2025). Leadership and the workplace environment are crucial to supporting workforce retention, as low team engagement is tied to administrative failure to satisfy fundamental psychological needs, such as clear institutional advocacy and personal safety (Harter, 2025). Fostering psychological safety directly influences individual-level adoption outcomes. By employing listening sessions, middle managers validate the core dimensions of the TOE model, demonstrating that an organization's internal managerial structure and cultural readiness determine how effectively an innovative tool is adopted (Tornatzky & Fleischer, 1990). This approach enables middle managers to co-lead initiatives through peer collaboration and shared leadership.

Capturing employee feedback enables a reimagining of the supervisory role. Middle managers intentionally moved away from top-down models, choosing to share power during ITI. Participant 8 explained leaders must optimize technology by "taking direct reports' recommendations and mobilizing them…instead of working slowly from leadership, just kind of dictating what it is that staff do." Peer

mentoring networks avoided bottlenecks, as described by Participant 1, noting: "You could partner your staff off with mentors…forming an advisory group to bounce ideas off them to help implement this." Decentralized trust structures enhance efficiency and build self-efficacy. Participant 4 stated providing staff "the opportunity to explore it on their own and come back as a larger group…gives them a role in what technology looks like", while Participant 5 observed that when staff "are all able to have input, they kind of viewed it as…'my thing' too." Participant 6 explained their team meetings operate as interactive "think tanks" where members take turns leading, stating, "Each week we would focus on one team member, and they would share their strengths and teach us…it wasn't me all the time." Analysis confirms concepts of the TOE framework, which posits an organization's structure and decision-making dynamics influence adaptability (Tornatzky & Fleischer, 1990). When supervisors shift from a top-down approach to collaborative models that incorporate frontline insights, they significantly improve efficiency and reduce risks that lead to implementation failure (Cammarano et al., 2025; Lukić Nikolić, 2024; Roy et al., 2024). Treating employees as partners drives productivity and enhances long-term competitive advantage (Wu et al., 2025). Moving away from centralized control mechanisms directly shapes the internal organizational context, thereby impacting strategic approach, system configurations, and operationalization while ultimately enhancing outcomes of ITI. Collectively, collaborative environments and psychological safety provide an essential foundation for effective technology adoption, setting the precedent for how specific instructional designs and skill support structures formalize workplace behaviors into operational success.

4.5. Theme 5: Environmental-Organizational Adaptability

Finally, the participant narratives collectively formed the fifth theme, environmental-organizational adaptability. ADP Research Institute (2025) found that organizations that continue to drive efficiency through adaptability enhance productivity. Analysis of the interview data indicated that structural alignment strategies, including establishing clear value lenses, optimizing operational efficiency, contextual analysis, managing ecosystem orientations, and ensuring federal compliance, were consistently described as essential practices for aligning organizational workflows with innovative technology adoption. One hundred percent of participants cited environmental-organizational adaptability as a fundamental component of ITI strategies. These strategic measures included vetting technical functionality against team or company output goals, understanding cultural contexts and implications, ensuring satisfaction of governing regulations, overseeing multilayered database feeds, and segmenting stakeholder touchpoints to ensure broad operational integration.

Participants' descriptions conceptualized environmental-organizational adaptability as a dynamic process in which leaders assess internal and external pressures and employ strategies to achieve systemic agility while fostering cohesion. A unan-

imous consensus was reached, emphasizing that the viability of innovative technology depends on alignment with organizational performance goals and capacity. For example, Participant 1 emphasized the necessity of strategic alignment, advising that leaders must "try to keep this technology goal that you have aligned with your company or your school's vision". However, ensuring alignment requires addressing systemic challenges, such as data gaps arising from implementation strategies. Participant 8 stated that "…key areas where there were vulnerabilities or gaps created in our processes because of the way the technology is implemented." Additionally, Participant 4 noted that substantial data gaps arise when large segments of the user population fail to engage with the system. To mitigate, Participant 4 stated that innovative technology must "integrate in a way that's seamless; that makes their work a little bit, almost easier", and that "if it doesn't feel intuitive…a lot of the staff members just kind of, like, push back from it". This demonstrates that ITI requires a balanced approach of enhancing operational efficiencies and infusion with current workflows. These narratives correspond with the core dimensions of the TOE framework, which posits how an innovation's technical traits, an organization's internal constraints, and industry realities significantly impact technology adoption (Tornatzky & Fleischer, 1990). ADP Research Institute (2025) found that organizations that provide useful efficiency tools and resources are three times more likely to have highly productive teams. Further, research on technical standardization indicates that cross-platform interconnectivity directly enhances total productivity and organizational sustainability (Kim et al., 2023; Wang et al., 2023). Ultimately, these findings suggest that environmental-organizational adaptability relies on a leader's ability to optimize technical design within workflow orientations to standardize operations, thereby mitigating ITI failures, fulfilling goals and mandates, and enhancing organizational agility.

Alignment and Advocacy

The first subtheme that branched from the initial finding of environmental-organizational adaptability was alignment and advocacy. Analysis of the interviews indicated that championing innovative technology strategies is a primary way to secure early employee buy-in and establish standard operating procedures. This subtheme was described as a process of translating high-level organizational goals into daily task processes. Alignment and advocacy strategies included effectively communicating the value added, streamlining workflow efficiency, and demonstrating strategic utility. Participants unanimously agreed that active leadership advocacy is a critical component of ITI. The participants described actively supporting ITI by modeling an enthusiastic attitude, advocating for workflow streamlining to maximize customer-facing interactions, and aligning daily technical tasks with global milestones.

Rather than relying solely on top-down mandates, participants highlighted that championing requires demonstrating how the technology has direct applicability to the user. Participant 4 illustrated this advocacy by framing system adoption

around end-user accessibility, explaining that "it's important that it feels intuitive, like the front-facing component at least," as the design should be guided by insight into "everyone's needs; also, understanding their strengths". However, this advocacy requires balancing future technical initiatives with the established cultural landscape. Participant 2 emphasized the task of balancing traditions with technological change, stating, "I needed to find a balance between keeping historical value and practices in place while also evolving the organization and its culture into 2025". Balancing these elements is critical, as a lack of strategic alignment leads to resistance. Describing this user friction, Participant 3 recalled, "Resistance would be the number one thing…they complained a lot, they found issues with the platform that were just unnecessary." This demonstrates the significance of leaders advocating for both their direct reports and innovative technology by developing practical solutions. Participant 5 detailed this dynamic, explaining that when adapting workflows for specific demographics, there is intentionality in "simplifying the procedure…simplifying what the actual staff needed to do" taking "a 35-step process and [shrinking] it down to seven primary steps".

This subtheme expands the organizational context of the TOE framework and matches established research regarding relational leadership behaviors and corporate social responsibility (CSR). While the TOE framework focuses on more rigid physical factors like company size and structural centralization, these findings show that a middle manager's active advocacy and individual framing serve as essential psychological mechanisms that enhance the functionality of a technological resource. Demonstrating clear utility and connecting it to transparent values drives user willingness to engage, and even share specialized expertise (Hussain et al., 2025; Neukam & Bollinger, 2022). Further, workspace incivility, burnout, and career regret decrease when leaders establish or maintain clear social constructs during technology change (Macias-Velasquez et al., 2021; Shin et al., 2025). The narratives of the participants highlight how balancing cultural preservation with technological advancement fosters organizational adaptability. Thus, when leaders illustrate the relative advantage of innovative technology, they convert the risks associated with unfamiliarity into opportunities for proactive engagement and thereby foster its adoption.

Environmental Engagement and Responsivity

The second subtheme identified was environmental engagement and responsivity. Analysis of participants' narratives revealed that strategies, including conducting a comprehensive contextual analysis, strict regulatory compliance monitoring, segmented stakeholder engagement, and managing ITI within timing constraints, were consistently described as mitigation techniques for unexpected operational bottlenecks. One hundred percent of participants cited environmental engagement and responsiveness initiatives as a critical component of effective innovative technology implementation strategies. Such interventions included auditing network interconnectedness, building compliance rubrics, mapping and demonstrating the impact of operations, and promoting stakeholder engagement

with ITI through early communication and active involvement.

Middle managers engage in a proactive diagnostic process to gain deep insight into existing ecosystems and the operational impacts of implementing innovative technologies. To mitigate disruption caused by technology change, managers must maintain an active awareness of technology adoption, evaluating both an individual user perspective and a broader systemic lens. When this awareness is lacking, and a breakdown in user acceptance occurs, it triggers measurable performance erosion that impacts organizational outcomes. Participant 3 detailed this, highlighting how user resistance directly impairs organizational productivity, stating, "[when] work is not being done…it's affecting the company larger. So, resistance, lack of communication, and just a longer time to create that buy-in [occurs], because if they're not motivated, then it takes us a longer time to support them to understand the platform." Participant 3's narrative highlights how low user motivation negates a secure baseline for workflow optimization.

To mitigate this, middle managers must actively connect individual user success with organizational outcomes. Providing explicit structural context directly influences individual input by translating abstract concepts into meaningful contributions. Participant 4 witnessed this shift, observing that end-user engagement increased when employees were capable of "seeing where they were successful, like actually, like, kind of also seeing their impact." The significance of contextualizing utility and articulating the logic behind ITI was highlighted by Participant 9, stating, "…you need people to understand the technology…that feeds back into the context of everything that we're doing and the why behind why we're doing it, not just the what." Efforts to transparently communicate the "why" behind technical changes operate as a critical hygiene factor within Herzberg et al.'s (1959) motivation-hygiene theory. Strategic clarity, platform utility, and clear communication establish the foundation for employee security, thereby enhancing change management efforts. Although hygiene factors do not independently motivate employees, their absence or inadequacy can lead to negative performance outcomes. Ultimately, by illustrating how individual inputs fit within the broader organizational scope, middle managers can effectively mitigate stressors that impede the implementation of innovative technologies.

Additionally, participants observed that evaluating multi-tiered stakeholder pressures represents a component of resource navigation. As middle managers guide ITI, focus frequently shifts to the structural constraints imposed by external governing bodies and policies. For Example, Participant 6 detailed the absolute necessity of aligning internal processes with systemic directives, emphasizing that "in order to be in compliance….there are steps that we need to follow." Also, Participant 8 detailed mitigating integrity risks by managing multi-tiered and disconnected government platforms, noting the necessity of "the development of standard operating procedures, just ensuring that as people are working in these different systems that there's some generally understood, integrity-holding way that people are engaged in the processes; and SOPs have been an excellent tool." Man-

aging such environmental constraints requires leaders to implement targeted mitigation measures to manage complex downstream workflows and, consequently, reduce operational errors that jeopardize integrity and cause regulatory non-compliance.

Environmental engagement and responsivity confirm the external environmental context of Tornatzky and Fleischer's (1990) TOE framework, noting that industry structures, regulatory demands, and government compliance rules heavily dictate organizational business decision-making. Further, the emerging patterns from the analysis correspond with scholarship regarding environmental influence in organizational change, as navigating government regulations and policy standards serve as a powerful driver that shapes technical adoption across modern industries (Omonov & Ahn, 2025). As technology initiatives expand, risks grow, requiring leaders to implement standardized processes and controls without compromising operational efficiency (Paya et al., 2024; Sepehrian et al., 2025). The interviews demonstrate these dynamics, highlighting the significance of middle managers constructing solution guidelines to satisfy external compliance standards while still promoting innovative technology implementation.

5. Professional Practice and Implications for Social Change

The findings provide practical insights for business leaders to implement innovative technology to improve engagement and productivity. Organizations achieve effective ITI when leaders align innovative technology with existing structures and workflows, designing utility around established cultural, environmental, and technical limitations (Satyro et al., 2024; Tornatzky & Fleischer, 1990). Assessing environmental and organizational context prior to deployment allows leaders to proactively prepare infrastructures to avoid bottlenecks or resistance, ensuring resource planning and technology change are sustainable (Kim et al., 2023; Wang et al., 2023). A significant strategy includes intentionally fostering collaboration and psychological safety through inclusive discussion forums and peer collaboration structures. Supportive leadership, peer-to-peer social networks, and positive working environments operate as hygiene requirements that promote worker autonomy and heighten engagement (Akgul et al., 2025; Richards et al., 2025).

Organizations that base instruction and support directly on employee capacity increase readiness for technical transitions and sustain through organizational change (Carvalho et al., 2024). Strategically phased rollouts, need-based instruction, and multimodal learning setups enhance competence, reduce system complexity, and prevent training fatigue. Furthermore, organizations can evaluate effectiveness by monitoring system metrics, data accuracy rates, and employee engagement surveys to capture qualitative and quantitative outputs (Harter, 2025; Wang et al., 2024). However, middle managers must balance automated tracking metrics with human-centric feedback loops to prevent surveillance anxiety from reducing psychological safety and promoting technology rejection (Dong et al., 2024; Suhardjo & Faisal, 2024). Finally, middle managers must commit to sup-

portive, relational leadership behaviors, leading with empathy and demonstrating personal technical competency. Empowering collaborative leadership and a hands-on management approach during ITI reduces workplace stress, increases user adoption, and drives workflow continuity (Kappal & Mishra, 2024; Shin et al., 2025).

The results provide a framework for positive social change as innovative technology redefines labor dynamics, encouraging organizations, educational bodies, and policy architects to prioritize a human-centered perspective. Viewed through a macro-societal lens, the results address and mitigate systemic stressors across the social determinants of health: economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context.

First, the results may reinforce economic stability by preventing technology-induced role alienation and job displacement. When new technologies are deployed via collaborative, bottom-up engagement, there is enhanced employee well-being, strengthened organizational trust, and high retention rates, enabling household financial stability (Akgul et al., 2025; Harter, 2025). Aligning technology with capabilities provides a method to stabilize performance, preserve workforce retention, prevent costly turnover, and safeguard workforce stability and financial security.

Second, structural training and process simplification frameworks may enhance access to and the quality of education within the modern adult-learning environment. Standard unedited manuals create learning curves that disproportionately alienate staff members with diverse educational baselines. This research addresses the educational barrier by illustrating the social value of process simplification, flowcharts, and customized coaching loops, offering a model to democratize digital literacy and ensure non-technical individuals can confidently build technical self-efficacy.

Third, this research offers critical implications for healthcare access and quality by cultivating psychosocially secure work environments that reduce exhaustion. Technological advancements implemented with comprehensive instructional and human-centric supports cultivate workplace collaboration, enhance psychological safety, and foster strong mental well-being (Shin et al., 2025; Wang & Yao, 2025). Anxieties and mental health distress may be mitigated when leaders build trust, model emotional vulnerability, and isolate training feedback from punitive monitoring, significantly reducing operational burnout and absenteeism (Dong et al., 2024).

Fourth, strategic optimization of innovative technology may influence the neighborhood and environment by driving ecological sustainability and resource efficiency. Data highlighted that when innovative technology aligns with environmental contexts, organizations successfully streamline supply chains, minimize resource waste, and lower carbon footprints (Mahmood et al., 2025; Wu et al., 2025). Globally, this strategic alignment may support green computing initiatives, mini-

mize environmental degradation, lower carbon dioxide emissions, and contribute to eco-sustainable communities.

Finally, this research may enrich the social and community context by modeling decentralized authority structures that rebuild historical trust gaps within human groups. Innovative technology changes isolate individuals, resulting in professional loneliness and cultural disconnection within communities (Aleksić et al., 2024; Rojas et al., 2025). This research addresses this disconnection by demonstrating how leaders can utilize listening sessions, cross-functional advisory boards, and interactive peer-mentoring networks to establish commonality, transforming rigid environments into collaborative ecosystems characterized by transparency and mutual trust.

6. Directions for Further Research

While the findings of this study provide significant practical strategies for implementing innovative technology, the current data present distinct parameters for future research. First, because the target population for this study was limited to middle managers in the United States service sector, future researchers should replicate this methodology in other markets, such as those in heavily product-centric or heavy manufacturing environments. Industry data suggests that manufacturing organizations navigate structural configurations and supply chain dynamics that skew operational outcomes when integrating innovative technology (Mahmood et al., 2025; Satyro et al., 2024). Conducting comparative studies across distinct market environments would help determine whether the ITI strategies presented in this study remain equally effective across highly variable operational environments or require unique industry-specific strategies.

Further, future research should explore the longitudinal impacts of algorithmic performance metrics on employee engagement and workforce retention. The data demonstrated a highly concentrated reliance on system-generated tracking logs to minimize supervisor subjectivity. However, fully automated or algorithmically intensive monitoring systems diminish psychological safety, increase stress, and increase resistance without humanizing interventions (Dong et al., 2024; Wang & Yao, 2025). Subsequent studies could examine employee retention rates and long-term self-efficacy metrics over an extended time period, determining critical thresholds at which leaders successfully integrate automated metrics with collaborative, employee-led goal development.

Finally, further investigation is needed to explore how specific types of emerging technologies influence user adoption behaviors differently. This project acknowledges that a broad definition of innovative technology could obscure unique behavioral pain points specific to distinct types of technology. Future academic inquiries should narrow their scope to explore how middle managers deploy relational leadership, shared vulnerability, and customized skills to support innovation during technology implementation, and determine whether cognitive barriers require unique change management strategies specific to the type of technol-

ogy being introduced.

7. Limitations

Research limitations refer to potential weaknesses within a research design, consequently influencing the results and conclusions of the research (Ott, 2024). My research project is subject to several key limitations. First, the sample size was not sufficient to allow for the generalization of findings to the broader population of U.S. service sector middle managers. Second, the reliance on middle managers' self-reported data through interviews presented potential for social desirability bias or recall bias. Finally, because the study did not focus on a specific innovative technology, the applicability of the identified effective strategies may be skewed or specific to the particular type of technology discussed by participants.

8. Conclusion

The purpose of this qualitative pragmatic inquiry was to identify and explore the effective strategies used by some middle managers to implement innovative technology into their employees' work processes to enhance employee engagement and productivity. Through a thematic analysis of participant transcripts and a rigorous integrative evidence review, five interconnected strategic components emerged: environmental alignment and technological fit; collaborative environments and psychological safety; leadership behavior; instructional design and skill support; and evaluation and continuous feedback. The structural synthesis displayed across the qualitative coding confirms that successful organizational technology change relies on balancing technical systems with explicit human care. When middle managers align new technology implementation with institutional goals while designing workflows around user capabilities, they reduce anxieties, mitigate operational bottlenecks, and significantly maximize organizational competitive advantage.

Theoretically, this doctoral research successfully bridges the gap between administrative configurations and behavioral outcomes. Integrating Tornatzky and Fleischer's (1990) technology-organization-environment (TOE) framework with Herzberg et al.'s (1959) motivation-hygiene theory provides a robust, multi-level lens for understanding the implementation of innovative technology. Middle managers satisfy critical hygiene needs and reduce resistance when they model vulnerability, maintain administrative accessibility, and proactively repair historical institutional trust gaps. Once these structural and cultural criteria are fulfilled, the introduction of shared power and tailored instructional design serves as intrinsic motivators, thereby transforming passive compliance into acceptance and buy-in.

Ultimately, the findings of this research project present definitive business applications as a framework and path for positive social change. Organizationally, the findings of the study highlight that technology relies on ensuring the intersection of technical structure and human acceptance is adequately balanced. Beyond the business context, findings of the study may potentially advance societal resilience by offering concrete methods to protect determinants of health. By demon-

strating how to structure equitable upskilling opportunities, minimize career burnout, and reinforce community trust, this project provides leaders with the strategic tools necessary to navigate innovative technology implementation, prioritizing a deeply human-centered and caring perspective.

Author Contributions

Canaan Perry was the primary researcher. Dr. Kim A. Critchlow was the mentor/advisor/reviewer of the research being performed.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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