



Leveraging IoT for Organizational Culture Transformation and Quality Improvement: A Case Study of PT Kabelindo Murni Tbk's Building Wire Production Line

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ABSTRACT

The adoption of Internet of Things (IoT) technology at PT. Kabelindo Murni Tbk. marks a significant milestone in leveraging integrated systems. By using a single application, positioning the company as a pioneer in IoT implementation within Indonesia's cable manufacturing industry. Thus, in this study aimed to examines the impact of IoT adoption on technological adaptation between organizational culture change and corporate goals achievement. Here, the qualitative method is performed to analyze the organizational culture change from several respondent. In this study, the data taken from subjective experiences of respondent from 2 managers, 2 supervisors, 1 management trainee, and 5 production staff. The parameter is includes improving product quality, optimizing energy resource usage, increasing the effectiveness of raw material utilization in cable production, and fostering changes in organizational work culture using IoT technology at PT. Kabelindo Murni Tbk. The result shows an adaptation IoT as a new technology is increasing decision-making processes, productivity, efficiency, effectiveness, and product quality. Thus, the IoT technology can improve organizational work in the company especially over wire production line.

1. Introduction

The increasing complexity and intensity of competition in Indonesia's industrial sector have compelled companies, including those in the cable manufacturing industry, to implement significant changes to maintain their competitive edge. To achieve this, companies are focusing on optimizing production processes to improve both the quality and quantity of their output, which is essential for gaining and sustaining consumer trust (Purnamasari & Cahyana, 2015). A key strategy in this optimization involves enhancing workforce competencies, which refers to improving employees' skills, knowledge, and adaptability to meet the demands of evolving production technologies and market expectations. By investing in workforce development, companies can ensure that employees are equipped to handle advanced manufacturing processes, utilize resources more efficiently, and

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contribute to innovation. These efforts not only improve product quality and production efficiency but also align with the principles of economies of scale, which emphasize reducing production costs while increasing output. Furthermore, companies must innovate by developing unique products and services to enhance product value, ensuring long-term competitiveness in the manufacturing sector.

Beyond product development, fostering a work culture that supports rapid technological advancements, and digital transformation is critical for organizational success. For instance, the adoption of integrated system-based technologies, such as the Internet of Things (IoT), requires not only technical upgrades but also a cultural shift within organizations. Technology fundamentally serves to enhance human tasks by improving efficiency and effectiveness, but its successful implementation depends on the readiness of human resources to adapt and embrace change. As Ramadhani and Hidayat (2016) highlight, human resources play a pivotal role as strategic partners in achieving organizational goals during digital transformation. They act as agents of change, driving the development of a work culture that aligns with technological advancements. This cultural alignment is essential for overcoming resistance to change and ensuring that employees are equipped with the skills and mindset needed to navigate digital transformation. Furthermore, as Haning et al. (2019) emphasize, the pace of digital transformation across industries often dictates the development and adoption of new technologies. Companies that successfully integrate these changes do so by embedding digital transformation into their organizational culture, while those that fail often struggle with cultural resistance or insufficient workforce readiness. Thus, the interplay between technology, human resources, and organizational culture is central to the success of digital transformation initiatives.

PT. Kabelindo Murni Tbk. is Indonesian company in IoT technology is being developed to improve product quality, accelerate digital transformation, and reshape the work culture of employees. The Building Wire production line was chosen as the pilot project for IoT implementation due to the need for significant improvements in production performance, which must meet high consumer demand. Additionally, the project aims to enhance the use of technology within the company and foster a more disciplined work culture among employees in the Building Wire production line. This includes stricter adherence to work hours and attendance regulations. Many researchers were studied the technology is improvement the product quality in Japan. Here, the *Kaizen* method is performed to increase sustainable development goals (SDGs) toward learning, transformation, and high-quality growth (Hosono, 2020). Meanwhile in Indonesia IoT company seeks to improve the quality of its human resources by encouraging employees to adopt better habits and higher levels of discipline. It is hoped that this initiative will bring significant changes to the Building Wire production line, particularly in terms of digital transformation, high-quality product output, and positive organizational culture shifts.

Research on IoT development in Indonesia has been conducted extensively, such as the study by Niqotaini et al. (2024) and the study by Saputra et al. (2024). However, in the cable manufacturing sector there has been not obtained in-depth research or analysis to capture a novel contribution to IoT development in Indonesia's cable industry. Many researchers explore the extent to which IoT can enhance productivity, effectiveness, efficiency, product quality, and human resource capabilities. However, at PT. Kabelindo Murni Tbk. this study aims to leverage IoT technology to establish a Lean Manufacturing and Industry 4.0-based organization. In addition, these companies adopting philosophy demonstrated improvements in productivity, product quality, profitability, and competitiveness (Maware & Parsley, 2023). Thus, IoT is expected to significantly support the company's efforts to achieve efficiency and effectiveness across all operational lines in the near future.

2. Methodology

2.1 Data and Location

In this study the qualitative approach is performed to obtain the data. According to Haning et al. (2019), a crucial role in exploring meanings within social, cultural, and psychological phenomena that cannot be adequately described through numbers and statistics alone. Thus, the parameter in this study is taken from subjective experiences of participants regarding the application of IoT in enhancing the practical functions of technology. The parameter study includes improving product quality, optimizing energy resource usage, increasing the effectiveness of raw material utilization in cable production, and fostering changes in organizational work culture using IoT technology.

In this study, purposive sampling was used to collect data from participants directly involved in the implementation of the IoT project. Specifically, data were gathered from 2 managers, 2 supervisors, 1 management trainee, and 5 production staff from the Building Wire production division. Observation data were collected by closely monitoring the participants' day-to-day activities, interactions, and workflows during the IoT implementation process. This included observing how employees adapted to new technologies, how tasks were restructured, and how communication patterns evolved within the team. Additionally, an open-ended questionnaire was distributed to 10 participants, including employees and management team members. The questionnaire consisted of questions designed to explore participants' perspectives on how IoT influenced work practices and drove cultural changes within the company. For example, participants were asked to describe specific changes in their roles, challenges they faced during the transition, and their views on how IoT impacted collaboration and efficiency. These methods provided both observational insights and qualitative feedback to better understand the interplay between IoT adoption and organizational culture.

2.2 IoT and Digital Transformation

In recent years, IoT technology has gained significant traction and is being increasingly utilized across various industries, ranging from manufacturing to smart homes. This technology enables seamless data collection, interaction, and communication between devices, fundamentally transforming traditional processes (Choudhary, 2024). Its integrated nature allows IoT to function as a control system for executing commands and retrieving data, making it a versatile tool for improving efficiency and effectiveness in diverse fields (Kumar et al., 2024). As a key driver of digital transformation, IoT not only enhances operational processes but also influences organizational work culture. According to Liu et al. (2024), digital transformation fosters innovation by improving communication efficiency and transparency, which strengthens organizational resources and positively impacts overall performance. Furthermore, Li and Jiang (2025) highlight that digital transformation optimizes the allocation of internal and external resources, enabling companies to achieve sustainable development through efficient production management. Together, IoT and digital transformation share a common goal: to leverage technology for greater efficiency, adaptability, and effectiveness in organizational operations. By integrating IoT into digital transformation strategies, companies can unlock new opportunities for innovation and long-term growth.

2.3 Organizational Culture and Technology

Organizational culture can evolve over time, influenced by the habits and regulations established by the company. According to Ernanto and Hermawan (2022), organizational culture refers to the fundamental values that guide management and organizational practices, which are upheld by both management and members of the organization. Raharja and Muhyi (2025) further explain that organizational culture is perceived as long-standing norms or values that must be adhered to by all employees. These norms serve as a behavioral guide and a framework for problem-solving, reflecting the values and principles that are believed in and maintained by all members of the organization.

Although organizational culture can change, the core principles that serve as a foundation must be upheld by every member to ensure harmony within a productive work environment. Beyond organizational culture, technology also plays a critical role in driving change management within organizations. As Ali (2020) highlights, technology is essential for optimizing various elements in business planning. Additionally, technology serves as a catalyst for organizational growth, encouraging continuous innovation and acting as a knowledge base to address economic changes and demographic shifts.

2.4 Cultural Adaptation

Cultural adaptation is changing within an organization, it is inevitable that the organization will face complex challenges that may act as significant barriers. These challenges must be addressed wisely, particularly when adapting to cultural changes. Key strategies include minimizing resistance, fostering effective communication, providing employee training and development, and ensuring readiness for adjustments in organizational structure during the implementation of IoT. According to Sandra (2021), resistance to change can be interpreted as a negative force and is often the greatest obstacle to achieving successful transformation. To address this, Kotter developed an eight-step change model to help organizations manage change effectively, minimizing employee resistance and ensuring sustainable transformation. The steps include creating a sense of urgency, forming a guiding coalition, developing a vision for change, communicating the vision, empowering employees to act, achieving short-term wins, consolidating gains, and embedding the changes into the organizational culture (Mouazen et al., 2024).

Communication also plays a critical role in managing cultural adaptation. As explained by Hermawan and Barlian (2017), communication can take three forms: vertical, horizontal, and diagonal, each serving distinct functions within the organization. Furthermore, training and development are essential components of cultural adaptation. Anggraeni (2025) highlights that training provides employees with specific knowledge and skills applicable to their current roles, while development focuses on enhancing employees' broader capabilities beyond their immediate job responsibilities.

In terms of organizational structure, Khotimah and Fitri (2025) emphasize that one of its primary purposes is to ensure that all members of the organization are assigned clear tasks and responsibilities. This prevents overlapping duties and confusion during implementation. A well-defined structure enables individuals and teams to understand their priorities and responsibilities, fostering a more organized and efficient work environment.

Thus, challenges in cultural adaptation should not be avoided but rather addressed with appropriate strategies tailored to the organization's needs. By doing so, the adaptation process can be optimized, minimizing obstacles and ensuring a smoother transition.

3. Results

In order to achieve the result, the data were collected through an open-ended questionnaire completed by employees from various positions at PT. Kabelindo Murni Tbk. Respondents included 2 managers, 2 supervisors, 1 management trainee, and 5 production staff from the Building Wire production division, all of whom were directly involved in the implementation of IoT technology. The study employed Lewin's Change Management Model as a theoretical framework to analyze the organizational culture transformation resulting from IoT adoption. This model, which consists of three stages—unfreezing, changing, and refreezing—provides a structured lens to understand how IoT implementation reshaped work practices and cultural norms within the company.

The unfreezing stage was evident in the shift from manual processes to automated systems, which disrupted existing workflows and required employees to adapt to new ways of working. Prior to IoT implementation, communication between teams was often delayed due to manual information-sharing processes. However, IoT systems enabled real-time data access, accelerating decision-making and improving interdepartmental coordination. This aligns with the "unfreezing" phase, where old habits and processes are challenged to prepare for change.

During the changing stage, the introduction of IoT technology facilitated significant cultural shifts, particularly in fostering collaboration and transparency. Management trainees (MTs) played a pivotal role as "change agents," introducing new ideas, innovations, and technologies that restructured organizational workflows. For example, MTs encouraged employees to adopt data-driven decision-making practices, which reshaped how employees thought and acted within the organizational structure. This stage reflects the active process of change, where new behaviors and practices are introduced and reinforced.

Finally, the refreezing stage was observed as the organization began to stabilize its new culture, characterized by increased transparency and collaboration. Respondents noted that IoT systems fostered a more open relationship between management and employees, as data became more accessible and decision-making processes more inclusive. This cultural shift toward transparency and objectivity was particularly evident in the IT and production staff, who reported improved time management and a greater focus on innovation. Additionally, IoT-based monitoring systems enhanced product quality by enabling teams to identify and address production issues early, fostering a culture of responsiveness and adaptability.

Despite these positive outcomes, challenges remain in the form of high implementation costs and limitations in existing IT infrastructure. These barriers align with the "unfreezing" stage of Lewin's model, where resistance to change and resource constraints often emerge as obstacles. To address these challenges, the company has invested in IT infrastructure upgrades and employee training programs, which are critical for equipping staff with the skills needed to fully utilize IoT technology. This aligns with the "changing" stage, where targeted interventions are necessary to support the transition.

Overall, the implementation of IoT at PT. Kabelindo Murni Tbk. has driven a transformation in organizational culture, moving toward a more collaborative, technology-driven, and adaptive environment. By applying Lewin's Change Management Model, this study highlights how IoT adoption not only improves operational efficiency but also fosters cultural shifts that enhance transparency, innovation, and responsiveness. While challenges persist, the company's efforts to address these barriers demonstrate a commitment to sustaining the benefits of IoT and ensuring long-term competitiveness in an increasingly digitalized market.

4. Conclusions

The study of Harnessing the Internet of Things (IoT) for Digital Transformation: A Case Study on Quality Enhancement and Organizational Change Culture in PT. Kabelindo Murni Tbk. Building Wire Production Line has been successful. Based on interviews with correspondent, the various employees at PT Kabelindo Murni Tbk. implemented of IoT technology over organization change culture on company's digital transformation journey. This technology has accelerated change culture processes including decision-making to improved product quality and efficiency production processes. The Respondent in managerial positions highlighted the significant benefits from real-time monitoring by using the IoT system. This monitoring system have capability to identify potential issues and take corrective actions plan. However, these systems have highly implementation costs to adapt the system to the company's existing infrastructure. Thus, the company have obstacles and efforts to address them over upgrading infrastructure and providing employee training. Here, the operational perspective of IoT implementation also brought positive changes to employee's work. Thus, the Interdepartmental of collaboration has become too smoother. In addition, in management level the daily tasks have been improved significantly during collaboration. The employees have comfortable feeling during use automated systems provided by IoT technology. Overall, the implementation of IoT at PT Kabelindo Murni Tbk. has delivered excellent results. Thus, the continued support from company during upgrading the system have significant performance to maintain competitiveness and ensure the sustainability in the near future.

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