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EMPOWERING HUMAN RESOURCES THROUGH WEB-BASED INVENTORY SYSTEMS: A CASE STUDY OF DIGITAL TRANSFORMATION IN TASIKMALAYA SMES

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Abstract. Digital transformation has become a strategic pathway for small and medium-sized enterprises (SMEs) to strengthen efficiency and competitiveness. However, success depends not only on technology deployment but also on human resource (HR) readiness to manage and leverage it. This study analyzes the design and implementation of a web-based inventory information system and examines its implications for HR empowerment at Toko Kue Zoya in Tasikmalaya. A qualitative descriptive single-case study was conducted using observation, semi-structured interviews, and literature review, followed by thematic analysis and triangulation. Findings show that the system accelerates stock-recording workflows, reduces manual input errors, and improves reporting accuracy, while simultaneously fostering digital confidence and task satisfaction among employees. Digital competence increased as users developed new skills through iterative system interactions, demonstrating that HR benefits emerge not merely from automation but from learning-by-doing. These outcomes align with the Technology Acceptance Model (TAM), where perceived usefulness and perceived ease of use drive consistent technology adoption, and with Human Capital Theory, in which skill development enhances work performance. The study contributes by positioning web-based inventory systems as human-centered digital transformation mechanisms rather than purely technical solutions, offering a learning-oriented adoption model that SMEs can replicate to integrate digitalization and HR development simultaneously.

Keywords: digital transformation; inventory information system; HR empowerment; digital competence; Indonesian SMEs.

1. Introduction

Digital transformation has become a central agenda for strengthening SME competitiveness across industries, including retail food service. Prior research shows that success is driven less by the mere availability of technology than by the readiness and competence of the workforce utilizing it (Marler & Parry, 2016; Kane et al., 2019). In this regard, employees' capacity to understand, operate, and benefit from digital systems determines whether technology improves performance or simply adds administrative burden (Bondarouk, 2021).

In Indonesia, SME digitalization has accelerated alongside government programs to raise digital literacy and operational efficiency. Nevertheless, the principal challenge remains human-centric: limited HR readiness and entrenched manual routines (OECD, 2023; World Bank, 2022). Many small firms adopt web-based applications for finance, sales, or inventory, yet struggle to realize value due to users' limited understanding and resistance to change (Nguyen et al., 2022; Al-Qudah et al., 2023).

Toko Kue Zoya a bakery operating for more than five years in Tasikmalaya, illustrates these issues. Inventory records were maintained manually using notebooks and a whiteboard, leading to stock discrepancies, information loss, and delayed order fulfillment, which undermined operational efficiency and customer satisfaction. This context underscores the need for a web-based inventory system to automate recording, accelerate reporting, and provide real-time stock information (Suharyanto et al., 2025).

Effective digital solutions, however, hinge not only on sound technical design but also on user acceptance, readiness, and adaptation. According to the Technology Acceptance Model (TAM) (Davis, 1989), technology uptake is shaped by perceived ease of use and perceived usefulness. Human Capital Theory (Becker, 1993) further posits that investments in training, skills, and knowledge raise productivity. Integrating these theories positions the web-based inventory system not merely as a technical innovation but as a digital HR development process.\

Recent studies reinforce the link between digital transformation and HR empowerment. Kane et al. (2019) argue that digital success is predominantly people-driven. Bondarouk (2021) shows that e-HRM strengthens organizational learning and job satisfaction. Nguyen et al. (2022) report that HR digital competence mediates the relationship between technology implementation and efficiency. Putri et al. (2023) find that web-based systems reduce recording errors and improve data accuracy in SMEs, while noting user adaptation hurdles.

Despite this progress, an empirical gap remains concerning how the design and implementation of web-based inventory systems shape HR competence and micro-level work behaviors in small retail settings. This study therefore focuses on evaluating such systems as vehicles for HR empowerment at Toko Kue Zoya, examining how the design process enhances efficiency, reduces manual errors, and strengthens digital literacy and job satisfaction.

Research questions:

1. How do the design and implementation of a web-based inventory information system at Toko Kue Zoya improve the effectiveness of stock management?
2. How does system implementation influence employee efficiency, data accuracy, and job satisfaction at Toko Kue Zoya?

A qualitative descriptive single-case design was adopted, combining direct observation, semi-structured interviews, and document analysis to understand system use, digital learning processes, and their effects on individual and organizational performance (Creswell & Poth, 2018). Theoretically, the study extends understanding of technology adoption and human capital strengthening within SMEs; practically, it proposes a human-centered digital adoption model applicable to similar small enterprises.

2. Literature Review

2.1 Digital HR Competence

Digital competence encompasses employees' ability to work effectively with data, applications, and digital processes (Marler & Parry, 2016). In SMEs, competence entails not only operating systems but also interpreting data for decisions (Kane et al., 2019). Strengthening digital literacy improves agility, performance, and adaptability (Nguyen et al.,

2022). In Indonesian SMEs, digital competence links technology use to work outcomes (Putri et al., 2023) and represents an investment in human capital (Becker, 1993).

2.2 Technology Acceptance (TAM)

TAM explains adoption through perceived ease of use and perceived usefulness (Davis, 1989). Evidence from Southeast Asian SMEs indicates that simple systems with clear benefits are more readily accepted (Al-Qudah et al., 2023). In Toko Kue Zoya's context, perceived reductions in errors and faster tasks support stronger acceptance and continued use (Bondarouk, 2021).

2.3 Human–Tech Synergy

Successful digitalization balances technical features with social factors—competence and work behaviors (Kane et al., 2019; Rahim et al., 2023). In SMEs, fit-for-purpose systems can catalyze organizational learning and nurture a data-driven culture (Teo et al., 2020). Thus, technology and people are mutually enabling, forming the core of a human-centered digital transformation.

3. Research Method

3.1 Approach and Design

This study employs a qualitative approach with a single-case study design to analyze how the implementation of a web-based inventory information system empowers human resources (HR) at Toko Kue Zoya, Tasikmalaya. This approach was chosen to enable an in-depth, contextualized understanding of the phenomenon in its real-world setting (Creswell & Poth, 2018). Following Purnia et al. (2020), qualitative descriptive research portrays factual conditions without manipulation of variables. The case was selected purposively because it represents a typical SME that transitioned from manual to digital stock management, making it suitable for examining HR-related impacts such as efficiency, accuracy, and job satisfaction, grounded in the Technology Acceptance Model (TAM) and Human Capital Theory (Davis, 1989; Becker, 1993).

3.2 Data Sources and Types

The study draws on two types of data, primary data: direct observation and semi-structured interviews with the owner, manager, and employees. Secondary data: operational documents, stock reports, and scholarly literature on SME digital transformation.

Data Collection Techniques

1. Field Observation, conducted to examine stock-recording activities before and after the digital system was introduced (Suhari et al., 2022).
2. Semi-Structured Interviews, used to elicit user experiences regarding training, as well as perceptions of system ease of use and usefulness (Fadhalah, 2021).
3. Literature Review, undertaken to strengthen the theoretical foundation through works on technology adoption and digital competence (Abdilah, 2021).

3.3 Data Analysis and Trustworthiness

Data were analyzed using thematic analysis (Braun & Clarke, 2019), comprising coding, theme development, and interpretation. Triangulation across observation, interviews, and documents was applied to strengthen validity, ensuring convergence of evidence on efficiency, accuracy, and job satisfaction outcomes. Credibility was reinforced through member-checking with informants to verify interpretations and reduce researcher bias (Lincoln & Guba, 1985).

Data credibility was ensured through source and method triangulation (Lincoln & Guba, 1985), comparing observations, interviews, and internal documents to secure consistency and reliability of the interpretations.

Table 1. Summary of the Research Approach

Component	Description
Study Type	Qualitative Descriptive
Design	Single Case Study – Toko Kue Zoya
Focus	HR transformation via a web-based inventory system
Core Theories	TAM; Human Capital Theory
Data Techniques	Observation, Semi-Structured Interviews, Literature Review
Analysis	Thematic Analysis (with triangulation for validation)

Source: Source: data processed by the researcher, 2025.

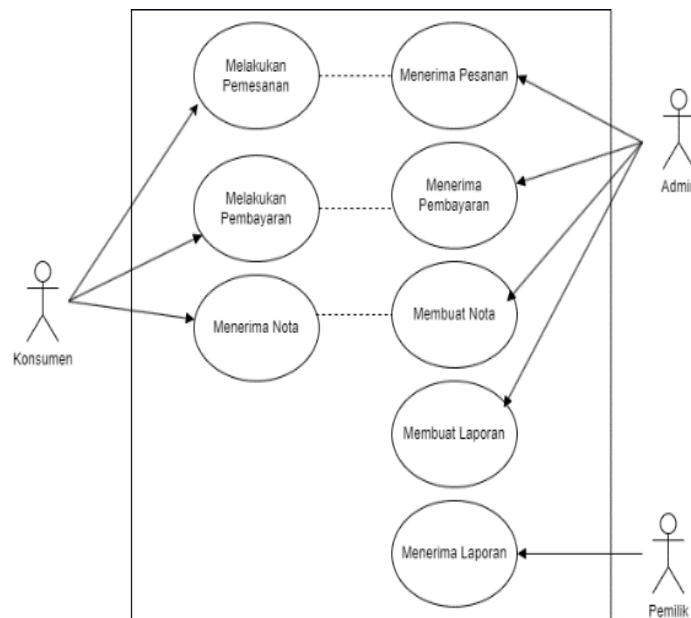
4. Results

4.1 Overview of System Implementation

The findings indicate that the web-based inventory information system developed for Toko Kue Zoya in Tasikmalaya successfully replaced the previous manual, paper-based process—using notebooks and whiteboards—with an integrated digital system. The system includes essential features such as multi-user login, item-category management, recording of incoming and outgoing stock, and real-time inventory reporting.

The design and development process involved several visualization stages, including:

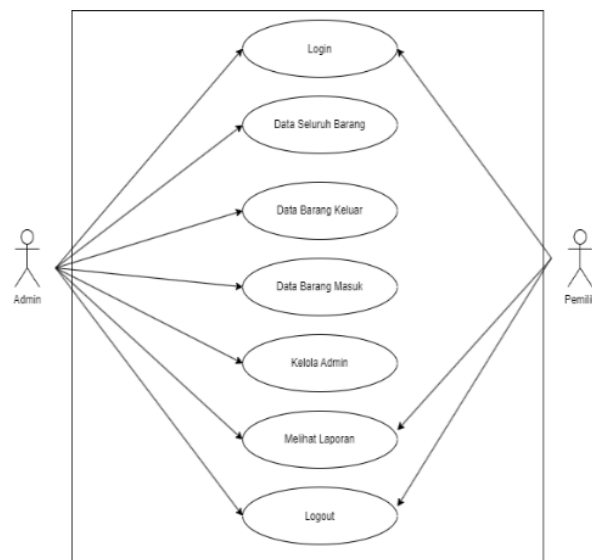
1. Use Case Diagram, illustrating interactions among system users (administrator, owner, and employees) and clarifying their roles and access rights in inventory management.



Source: data processed by the researcher, 2025.

Figure 1. Current System Use Case

Figure 1 illustrates the existing manual process at Toko Kue Zoya, where interactions between the customer (consumer), the administrator, and the owner occur without digital integration. The workflow involves manual order taking, payment confirmation, and receipt issuance. Each process is dependent on human input, making data validation and reporting time-consuming and error-prone.

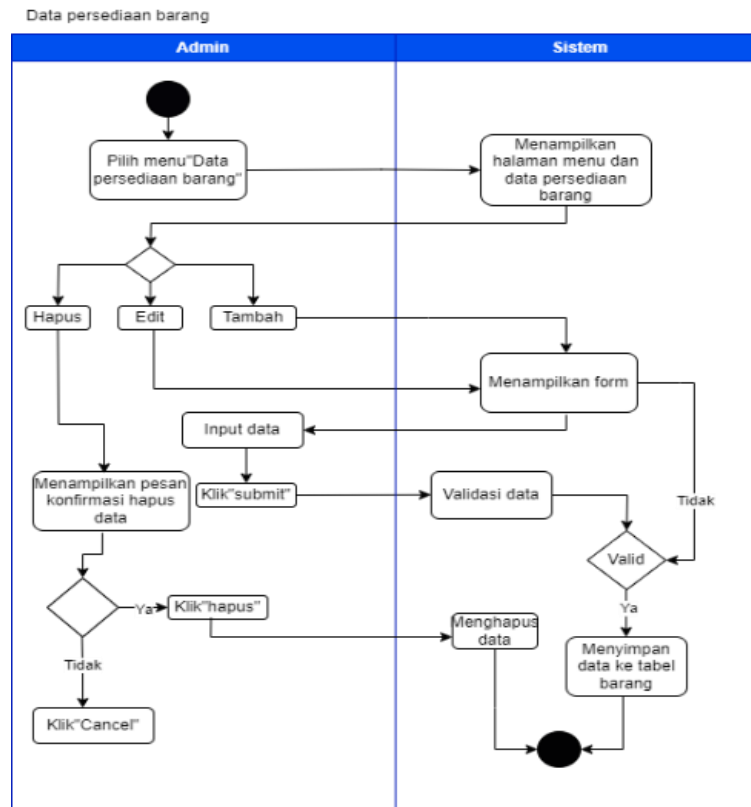


Source: data processed by the researcher, 2025.

Figure 2. Proposed Attendance Use Case

Figure 2 presents the proposed web-based inventory system design. The diagram depicts a streamlined process that integrates login authentication, item management (incoming and outgoing stock), administrative control, and report generation. The inclusion of automated data flows reduces redundancy and human error while enabling real-time monitoring of inventory activities. This model represents a transition from isolated manual tasks to a unified digital workflow that supports HR efficiency and organizational transparency.

2. Activity Diagram, outlining workflows from login to recording incoming and outgoing items, ensuring a logical and non-redundant flow of operations.

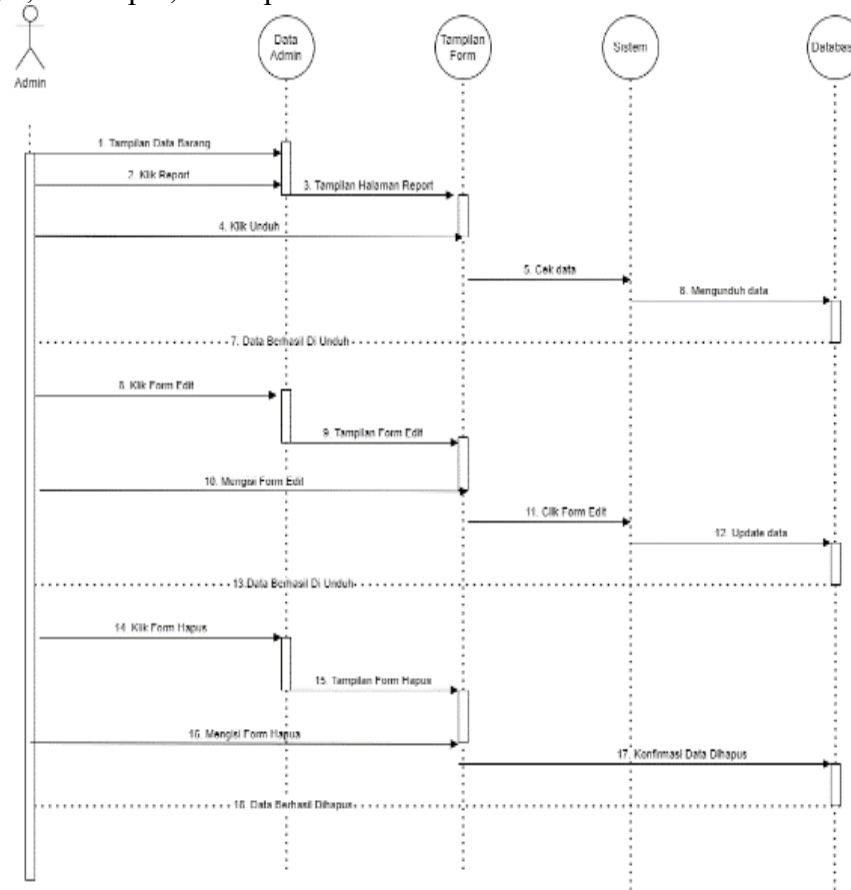


Source: data processed by the researcher, 2025.

Figure 3. Item Activity Diagram

Figure 3 depicts the activity flow between the Admin and the System within the web-based inventory information system. The diagram demonstrates how administrators manage inventory data through actions such as adding, editing, and deleting item records. When an admin selects the “Inventory Data” menu, the system displays the relevant page and form for data input. The system then validates the entered data before saving or updating it in the database. If the admin chooses to delete data, a confirmation process is initiated to prevent accidental removal. This structured interaction ensures that all item transactions are systematically validated and recorded, enhancing data integrity and operational accuracy.

3. Sequence Diagram, showing the dynamic relationships between system objects such as login, data input, and report validation.

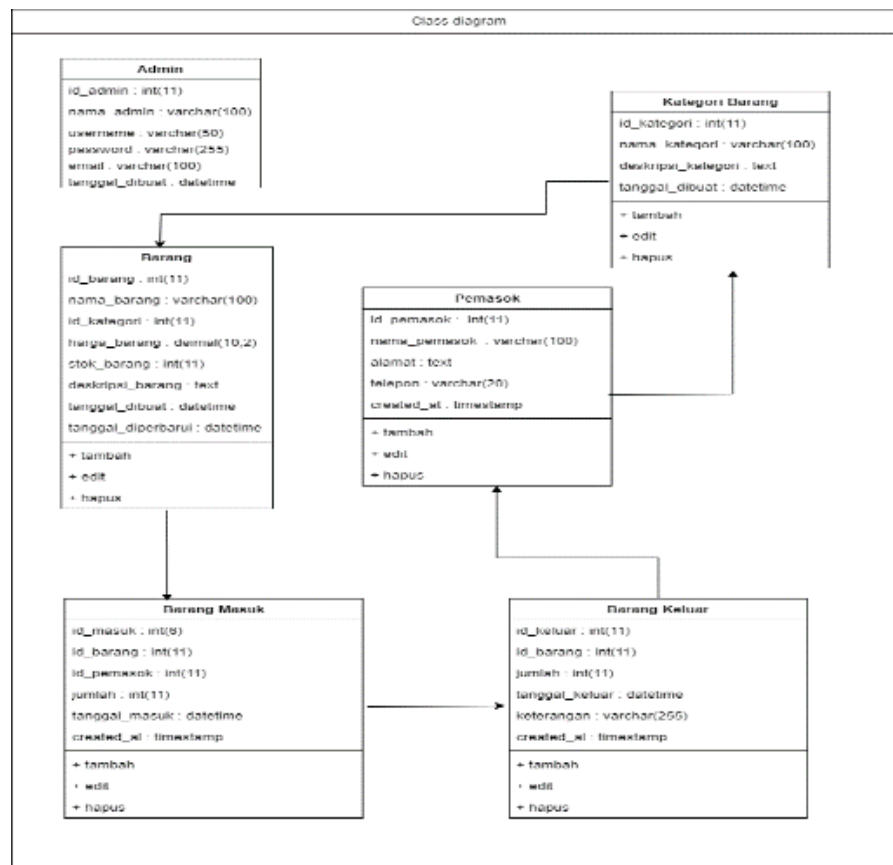


Source: data processed by the researcher, 2025.

Figure 4. Admin Data Sequence Diagram

Figure 4 illustrates the sequence of interactions between the Admin, Extra Admin, Template Form, System, and Database components within the web-based inventory system. The diagram describes how the admin initiates data entry activities, uploads templates, and manages item information through a structured process. Each step follows a logical communication flow—from user input to data validation and storage in the database. The system responds to every admin action by generating or updating reports in real time, ensuring synchronization between the interface and the stored data. This sequence enhances process transparency, minimizes redundant actions, and maintains the consistency of inventory records across the system.

4. Class Diagram, representing the data structure and relationships among system modules to ensure consistent data integration.

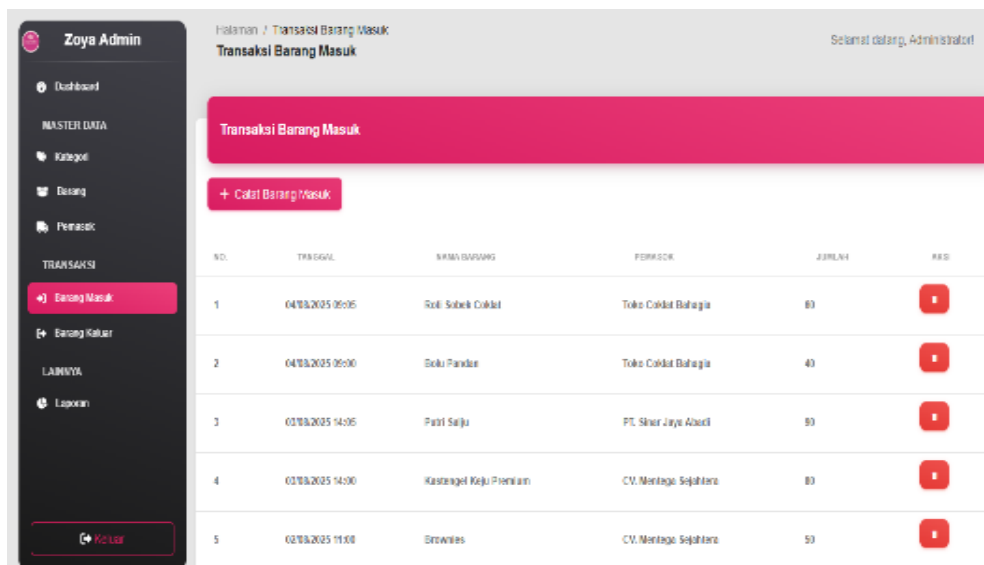


Source: data processed by the researcher, 2025.

Figure 5. Inventory System Class Diagram

Figure 5 shows the structure of the web-based inventory system, consisting of classes such as Admin, Item, Order, Incoming Item, Outgoing Item, and Item Category. Each class includes key attributes and methods related to data input, validation, and reporting. The relationships among these classes illustrate how inventory data is connected and managed across the system, ensuring consistency and efficiency in stock recording and reporting.

5. User Interface (UI) Design, created with user-friendly principles to facilitate use by employees with limited technical backgrounds.



ID	Tanggal	Nama Barang	Pemasok	Jumlah	Aksi
1	04/08/2025 09:05	Susu Susuk Coklat	Toko Coklat Bahagia	80	[Edit]
2	04/08/2025 09:00	Susu Pandan	Toko Coklat Bahagia	40	[Edit]
3	02/08/2025 14:05	Pabri Selju	PT. Sinar Jaya Abadi	80	[Edit]
4	02/08/2025 14:00	Kastengel Kaju Premium	CV. Montego Sejahtera	80	[Edit]
5	02/08/2025 11:00	Brownies	CV. Montego Sejahtera	50	[Edit]

Source: data processed by the researcher, 2025.

Figure 6. Incoming Goods Screen

Figure 6 displays the Incoming Goods interface of the web-based inventory system. This screen allows the admin to record, edit, and delete incoming stock transactions, including details such as date, supplier, item name, and quantity. The structured layout improves data accuracy and simplifies inventory tracking, enabling real-time monitoring of goods entering the system. System implementation occurred in three main stages: internal testing, employee training, and full deployment into daily operational activities.

4.2 Impact on Work Efficiency

Prior to the system's introduction, stock recording at Toko Kue Zoya required significant manual effort and time to consolidate incoming and outgoing item data. After the web-based system was implemented, employees reported that the recording process became considerably faster and more structured. One employee commented:

"We used to forget which items had been recorded. Now everything is automatically logged into the system. When an item arrives or leaves, we just click." (Interview, September 10, 2025)

This observation supports the findings of Nguyen et al. (2022), who noted that digitalizing routine processes enhances work efficiency particularly when systems are intuitive and relevant to user needs. These results reinforce the Technology Acceptance Model (Davis, 1989), which posits that perceived ease of use has a direct influence on productivity and technology adoption.

4.3 Reduction of Manual Errors and Improvement in Data Accuracy

Before system adoption, the store frequently encountered discrepancies between recorded stock and actual inventory levels. After implementation, these inconsistencies

significantly decreased due to the system's auto-validation features that detect duplicate or negative stock entries. The store owner stated:

"Previously, the stock reports rarely matched the actual goods. Sometimes items were deducted in the record but still available in the warehouse. Now, the system automatically calculates and displays accurate data." (Interview, September 13, 2025)

These findings are consistent with Putri et al. (2023), who found that web-based systems can improve data accuracy and minimize human error through automatic validation. Theoretically, this outcome reflects an enhancement of human capital (Becker, 1993), as employees acquire new digital competencies that lead to more precise and reliable outputs.

4.4 Increased Job Satisfaction and HR Adaptation

Beyond operational efficiency, system implementation positively affected job satisfaction and employee adaptation to technology. Most employees reported that the new system simplified their work and reduced administrative burden. An administrative staff member remarked:

"I wasn't used to working with computers before, but because the system is simple, I quickly learned it. Now I'm happier since the job finishes much faster." (Interview, September 15, 2025)

This statement illustrates improved self-confidence and intrinsic satisfaction as a result of enhanced digital competence. The finding aligns with Bondarouk (2021) and Al-Qudah et al. (2023), who assert that adopting digital HR systems fosters motivation, a sense of control, and overall job satisfaction.

4.5 Thematic Analysis and Theoretical Synthesis

Thematic analysis of interviews and observations revealed three primary themes linking digital system implementation with HR empowerment.

Table 2. Thematic Analysis and Theoretical Synthesis

Main Theme	Description	HR Performance Indicators	Supporting Theory
Operational Efficiency	Reduced time for stock entry and reporting processes	Data-input time, validation speed	Technology Acceptance Model Perceived Usefulness
Data Accuracy and Control	Automated validation and transparent stock reporting	Error rate in recording	Human Capital Theory
Job Satisfaction and Digital Adaptation	Enhanced comfort, confidence, and engagement in system use	Perceived ease of use and job satisfaction	e-HRM & Organizational Learning (Bondarouk, 2021)

Source: Source: data processed by the researcher, 2025.

These findings demonstrate that digital transformation success in SMEs extends beyond technical efficiency. The web-based inventory system also functions as a medium for continuous learning and digital skill development, enhancing the organization's overall human capacity.

4.6 Summary of Key Findings

Table 3. Summary of Key Findings

Focus Area	Empirical Result	HR Impact	Theoretical Interpretation
HR Work Efficiency	Noticeable reduction in recording time	Employees complete tasks more quickly and confidently	Consistent with TAM simple, useful systems improve productivity
Reduction in Manual Errors	Significant improvement in data consistency	More reliable stock information and decision-making	Consistent with HCT digital competence reduces human error
Job Satisfaction and Adaptation	Higher confidence and work satisfaction among staff	Higher motivation and ownership toward digital work. Increased digital fluency over time	Consistent with e-HRM and Organizational Learning digital systems enhance employee engagement

Source: Source: data processed by the researcher, 2025.

The summary indicates that the web-based inventory system improved operational performance and HR outcomes simultaneously: employees worked faster, produced more accurate records, and experienced greater job satisfaction as they gained digital competence through iterative system use. These results confirm that digital transformation in SMEs becomes effective not because technology automates tasks, but because employees internalize new work patterns, validating the relevance of TAM in shaping user acceptance, Human Capital Theory in strengthening competence, and Change Management Theory in sustaining behavioral improvement.

5. Discussion

5.1 The Design and Implementation Process of the Web-Based Inventory Information System at Toko Kue Zoya

The design and implementation of the web-based inventory information system at Toko Kue Zoya in Tasikmalaya demonstrate that the success of digital transformation in small enterprises depends not only on technical design but also on effective change management strategies and the digital readiness of human resources.

During the design phase, the researcher and store owner identified key user needs, including the ease of recording incoming and outgoing goods, automated reporting, and real-time access to stock data. The design adopted a user-centered approach, in which features and interfaces were tailored to the abilities of users who generally had limited technological backgrounds. This aligns with the Digital Readiness Framework, which emphasizes that the

complexity of technological systems must correspond to users' digital capacity (Marler & Parry, 2016; Bondarouk, 2021).

The implementation phase was carried out gradually through internal testing and structured user training. Employees participated in data entry simulations, login procedures, and stock validation activities. This process not only enhanced technical skills but also fostered a sense of ownership toward the new system. Interview results revealed that most employees felt more confident and engaged after training.

The adaptation process among employees reflects Change Management Theory (Kotter, 2012), which identifies awareness, learning, and commitment as key stages in successful organizational transformation. From an organizational perspective, the introduction of the web-based system reduced reliance on manual record-keeping, which previously caused data duplication and reporting delays. Strengthening the digital reporting system enhanced transparency, accelerated decision-making, and facilitated coordination among employees.

These findings align with the research of Nguyen et al. (2022) in Vietnam and Rahim et al. (2023) in Malaysia, which conclude that successful digitalization in SMEs is driven by early HR involvement in system design and training. Consequently, the process of system development and implementation at Toko Kue Zoya can be regarded as a co-creation process between technology and people representing not merely software innovation, but also a transformation in work behavior that leads to greater efficiency and collaboration.

5.2 The Impact of System Implementation on Work Efficiency, Data Accuracy, and Job Satisfaction

The implementation of the web-based inventory information system produced a significant impact on work efficiency, data accuracy, and employee job satisfaction at Toko Kue Zoya.

Before adoption, stock-recording processes were often delayed, prone to human error, and inconsistent with actual conditions. After implementation, the time required to manage stock data was substantially reduced, and input errors declined considerably.

The observed improvement in efficiency aligns with the Technology Acceptance Model (TAM) proposed by Davis (1989), which explains that perceived ease of use and perceived usefulness directly influence user performance and technology adoption. In this context, employees viewed the new system as both easy to operate and relevant to their daily tasks, thereby reinforcing their commitment to sustained usage.

Furthermore, system implementation reflects the development of digital competence among employees, as explained by Human Capital Theory (Becker, 1993). Through continuous use of the digital system, employees gained new skills in operating web-based tools, managing data flows, and organizing information systematically. Technology thus served as a means of strengthening human capital rather than merely automating manual tasks.

Interview data also highlighted positive psychological outcomes. Employees expressed higher intrinsic motivation and satisfaction, noting that their work had become easier, faster, and more measurable. These findings are consistent with Bondarouk (2021) and Al-Qudah et al. (2023), who found that simple digital systems such as e-HRM can increase employee

engagement, motivation, and job satisfaction, particularly in small enterprises with high administrative workloads.

From a change management perspective, positive behavioral shifts at Toko Kue Zoya were facilitated by effective communication and participatory training. Employees were not passive recipients of directives but active learners who understood how the system improved their work. This participatory process reflects Lewin's (1951) three-stage change model:

1. Unfreezing, raising awareness of problems in the previous manual system;
2. Changing, implementing the new system through supported training; and
3. Refreezing, internalizing new practices until they became part of the organizational culture.

Comparatively, these results correspond with Suryanto et al. (2021) in Indonesia and Teo et al. (2020) in Singapore, who observed that SME digitalization success depends on HR readiness and inclusive change management. Similarly, Santiago et al. (2023) in the Philippines found that digital adoption in retail sectors improves efficiency and transparency, though it requires sustained investment in digital training and cultural adaptation.

Although the proposed system contains several technical elements—such as automated validation, real-time reporting, and structured workflows—the main source of performance improvement lies in the human–technology interaction rather than in the software itself. Each feature indirectly serves as a digital learning scaffold for employees: task automation reduces cognitive load, real-time feedback encourages self-correction, and standardized forms help users internalize efficient data-entry routines over time. These mechanisms demonstrate that the system becomes effective not because it “does the work,” but because it trains employees to work better. This aligns with the Technology Acceptance Model, where perceived usefulness and perceived ease of use foster voluntary adoption and continued use; with Human Capital Theory, where increased digital competence translates into higher productivity; and with Change Management Theory, which assumes that behavioral change is sustained when individuals experience visible benefits during the transition period. Thus, the inventory system is best understood as a human-centered digital transformation tool that stimulates capability building and work adaptation, not merely as a technical platform for stock control.

In summary, the web-based inventory information system at Toko Kue Zoya not only improved operational performance but also cultivated a learning-oriented workplace, where digitalization serves as a long-term HR development strategy rather than a short-term technological solution.

Theoretically, this study extends understanding of Human Resource Digital Readiness within the context of Indonesian SMEs. It reinforces prior findings that HR preparedness is the primary determinant of digital transformation success (Kane et al., 2019; Marler & Parry, 2016). The integration of TAM, Human Capital Theory, and Change Management Theory in this study forms a new conceptual synthesis emphasizing that digital system adoption must be accompanied by sustained investment in HR training and empowerment.

Practically, the study offers a human-centered implementation model for inventory information systems, structured in four key stages, user needs analysis, stepwise training, initial mentoring and coaching, and continuous evaluation and improvement. This model can

be replicated in other SMEs particularly in retail and culinary sectors across Southeast Asia that face similar challenges in integrating technology with limited human resource capacity.

6. Conclusion

Based on the findings and discussion, it can be concluded that the digital transformation achieved through the implementation of a web-based inventory information system at Toko Kue Zoya successfully addressed two key aspects.

1. The design and implementation process, which involved human resources from the early stages, fostered digital readiness and reduced employee resistance to organizational change.
2. The system implementation had a positive impact on work efficiency, data accuracy, and employee job satisfaction, demonstrating the system's effectiveness in enhancing both operational and human performance.

This study offers a theoretical contribution by reinforcing the integration of TAM, Human Capital Theory, and Change Management in explaining human-centered digital transformation; a practical contribution by providing a replicable learning-oriented adoption model for SMEs; and a future research opportunity to extend analysis across multiple cases and digital contexts to improve generalizability.

Overall, this study affirms that human resource empowerment through technology is not an automatic outcome of digitalization, but rather the result of participatory and learning-oriented change management. The findings highlight the strategic role of HR engagement in ensuring that digital systems not only improve productivity but also cultivate adaptive, capable, and motivated employees forming the foundation of sustainable digital transformation within small and medium-sized enterprises.

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