



## Human Capital Development Strategy in Improving Employee Competence Readiness to Face Digital Transformation

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### ABSTRACT

This study aims to analyze Human Capital Development (HCD) strategies in improving employee competency readiness for digital transformation, identify factors that influence the effectiveness of its implementation, and evaluate its contribution to digital competency readiness. The study uses an exploratory descriptive qualitative approach with data collection techniques through in-depth interviews, observation, and documentation. Research informants consisted of HR managers, learning development leaders, and employees involved in competency development programs. Data analysis was conducted using the Miles, Huberman, and Saldaña model through the stages of data reduction, data presentation, and conclusion drawing. The results show that effective HCD strategies in the context of digital transformation include the implementation of technology-based adaptive learning, competency mapping, reskilling and upskilling programs, and strengthening digital mentoring.

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## **INTRODUCTION**

The world is currently at the most transformative historical turning point since the invention of the steam engine, namely the era of the Industrial Revolution 4.0 which converges with the phenomenon of Society 5.0. This convergence does not simply bring new tools, but changes the ontology of work, the way humans interact, and the mechanisms of value creation in the global economy through the massive integration of physical and digital systems such as Artificial Intelligence (AI) and Big Data. As emphasized in this study, this disruption has created a fundamental paradigm shift where the competitive advantage of organizations is no longer determined by the ownership of physical capital, but by the quality of human capital (Human Capital) which is the main driver of innovation. However, amidst the exponential acceleration of technology, an existential challenge has emerged in the form of "The Great Digital Paradox," a situation where large investments in digital infrastructure are often not accompanied by improvements in organizational performance due to human unpreparedness in adopting it.

The development of digital technology, automation, artificial intelligence, and big data has pushed organizations across various sectors to undertake comprehensive digital transformation. Digital transformation not only changes business processes but also demands changes in workforce competencies to adapt to new job demands. In this era, organizations need employees with digital literacy, analytical skills, learning flexibility, and a high capacity for adaptation. Zhang et al. (2024) emphasize that digital transformation requires organizations to build new competency models that are responsive to exponential technological developments.

However, the main challenge facing organizations is the persistent digital competency gap between employees' actual capabilities and the competencies required in digital work systems. Becker (1993) stated that improving workforce quality can only be achieved through continuous investment in education, training, and skills development as a form of human capital investment.

Human Capital Development (HCD) is a key strategy for improving employee competency readiness to face these changes. Afandi et al. (2024) explain that modern HR development trends increasingly emphasize the integration of digital learning, adaptive learning systems, and lifelong learning as the foundation for future work readiness. Furthermore, Leontes and Hoole (2024) found that structured human capital management practices significantly impact work performance through employee engagement and adaptive readiness.

However, the implementation of HCD strategies in digital transformation still faces obstacles such as low organizational digital culture readiness, limited learning infrastructure, and a lack of systematic digital competency mapping. Therefore, this research is crucial to analyze Human Capital Development strategies to improve employee competency readiness for digital transformation.

The urgency of this research is further heightened given that the global pandemic has accelerated technology adoption far beyond initial predictions. If

not promptly addressed through reskilling and upskilling programs, it will trigger the risk of massive structural unemployment. Furthermore, the demands of organizational agility in an uncertain environment require every individual to possess data-driven decision-making skills and effective virtual collaboration. Unique challenges also arise from the presence of a cross-generational workforce, which requires a more inclusive and personalized approach to competency development. Using a descriptive qualitative approach, this research aims to examine how HCD strategies, from adaptive learning to competency mapping, play a significant role in bridging the digital divide. Ultimately, this research confirms that digital transformation is not just a technological issue, but a human one, where competency readiness is the primary foundation for organizations to survive and thrive amidst the uncertainties of the digital economy. This research is crucial because Human Capital Development (HCD) in the context of digital transformation is highly urgent due to the risk mitigation of structural unemployment due to automation without a systematic reskilling and upskilling strategy, which poses a significant risk of structural unemployment. Technologies such as AI and automation have the potential to replace administrative and repetitive roles. This research urgently seeks to map how organizations can transform the threat of job elimination into an opportunity for employees to move into more strategic and value-added roles. Strategies are needed to synchronize the pace of technological evolution with the pace of human learning to ensure that technology investments are not wasted. Adaptive learning and technology-based mentoring are essential to accelerate the formation of an agile organizational culture. To provide a clear direction for this research, the following problem formulation is formulated:

1. How is the Human Capital Development strategy implemented to improve employee competency readiness to face digital transformation?
2. What factors influence the effectiveness of Human Capital Development strategies in the context of digital transformation?
3. How does Human Capital Development contribute to employees' digital competency readiness?

The objectives of this research are:

1. Analyzing Human Capital Development strategies in improving employee competency readiness to face digital transformation.
2. Identify factors that influence the effectiveness of HCD strategy implementation.
3. Evaluating the contribution of Human Capital Development to employee digital competency readiness.

## **LITERATURE REVIEW**

### *Human Capital Development as a Strategic Investment*

Human capital development is an organization's systematic effort to improve the quality of its human resources through education, training, and competency development. Gary Becker's (1964) human capital theory asserts that investing in people will increase productivity and provide long-term economic benefits. In recent developments, this concept has become

increasingly relevant in the digital age. The World Bank's 2020 Human Capital Index report shows that the quality of human resources contributes significantly to economic growth and global competitiveness. Critically, however, many organizations still don't prioritize human resource development strategically, treating it merely as an administrative activity. This disconnect between business strategy and human resource development is one of the main causes of low organizational readiness in facing technological change.

#### *Digital Transformation and Competency Disruption*

Digital transformation is a fundamental change in an organization through the integration of digital technology into all aspects of operations. According to the World Economic Forum's Future of Jobs Report (2023), approximately 44% of the workforce's core skills will change in the next five years due to technological advancements. In addition, McKinsey & Company (2021) revealed that more than 85% of global companies experienced accelerated digitalization, but only around 30% succeeded effectively, mainly due to limited human resource readiness. This indicates a gap between technological development and human readiness (human capital lag). Critically, digital transformation failures are more often caused by human factors than technological ones.

#### *Employee Competency Readiness in the Digital Era*

Employee competency readiness is a determining factor in the success of digital transformation. According to David McClelland (1973), competency is a basic individual characteristic that influences superior performance. In the modern context, employee competencies not only include technical abilities, but also non-technical competencies such as critical thinking, problem solving, adaptability, digital literacy. Data from the OECD (2019) shows a significant skills mismatch between workforce competencies and industry needs. Meanwhile, a LinkedIn report (2023) states that companies with robust learning programs have employee retention rates up to two times higher. Critically, however, many training programs are not relevant to the actual needs of industry, and thus are unable to close the existing competency gap.

#### *Human Capital Theories*

Human Capital Theory (HCT), developed by Gary Becker (1993) in the third edition of *Human Capital: A Theoretical and Empirical Analysis*, positions investment in education and training as an economic variable that can be analyzed using the same framework as investment in physical capital. Central to this theory is the idea that spending on improving human capabilities constitutes investment, not simply consumption, because it yields measurable returns in the form of increased productivity, higher wages, and greater contributions to economic growth. Becker identified three primary mechanisms for enhancing human capital: (1) formal education that enhances cognitive abilities and learning capacity, (2) on-the-job training that enhances job-specific skills, and (3) work experience that accumulates tacit knowledge that cannot be

formally taught. These three mechanisms complement each other and are ideally designed to be integrated within an organization's human resource development system.

In subsequent developments, Schultz (1961) and Mincer (1974) extended the HCT by incorporating on-the-job training and work experience as important determinants of productivity and wages. Mincer's model, in particular, proved highly influential in labor econometrics, showing that each additional year of education contributes an average of 8–10% to wage increases, while each year of work experience contributes about 3–4% in the first decade of a career.

Furthermore, Lucas (1988) integrated human capital into the endogenous growth theory, showing that the accumulation of human capital, not just physical capital, is the primary engine of long-term economic growth. The policy implications of Lucas's model are significant: public investment in education and training not only benefits individuals but also generates positive externalities that drive aggregate economic growth.

In the context of strategic management, Lepak & Snell (1999) integrated HCT with the RBV perspective in the *Journal of Management* to develop Human Resource Architecture, a framework that helps organizations make strategic decisions about how to manage different groups of employees based on the strategic value and uniqueness of their human capital.

#### *Resource-Based View (RBV)*

The Resource-Based View (RBV), comprehensively formulated by Jay Barney (1991) in his seminal article "Firm Resources and Sustained Competitive Advantage" in the *Journal of Management*, has been one of the most influential theories in strategic management over the past three decades. At the heart of the RBV is the proposition that a firm's sustained competitive advantage stems not from its industry position or market structure (as emphasized by Porter), but from the possession and management of unique and difficult-to-imitate internal resources.

According to Barney (1991), a resource can be the basis of sustainable competitive advantage if it meets four criteria in the VRIN framework: (1) Valuable resources enable a company to exploit opportunities or neutralize environmental threats; (2) Rare resources are owned by very few or even no current and potential competitors; (3) Inimitable resources are difficult or very expensive for competitors to imitate, either due to unique historical conditions, causal ambiguity, or social complexity; (4) Non-substitutable resources do not have equivalent strategic resources that can be used to replace them.

Human resources with superior competencies, particularly in the digital era, meet all VRIN criteria. In-depth knowledge of specific technologies is valuable; high-level digital talent remains scarce in the job market; internalized innovation, creativity, and leadership capabilities are inimitable; and human capabilities such as empathy, ethical judgment, and creativity are non-substitutable.

Terence & Hitt (2003) in the *Strategic Management Journal* expanded the RBV framework by emphasizing that the strategic value of HR is determined

not only by individual competencies, but also by the organization's ability to combine, integrate, and distribute that knowledge effectively, known as organizational capability or dynamic capability (Teece et al., 1997). Organizations that successfully develop dynamic capability are able to respond quickly to environmental changes through continuous reconfiguration of human resources.

In the context of digital transformation, Wright, McMahan & McWilliams (1994) in the *Strategic Management Journal* showed that human capital is the most difficult source of competitive advantage to imitate because it is causally ambiguous, meaning competitors cannot easily identify the specific attributes that make an HR team more effective. This means that investing in developing employees' digital competencies not only improves operational performance but also builds a strategic moat that protects the company's competitive position in the long term.

#### *Competency-Based Development Theory*

Competency-Based Development (CBD) is a systematic approach to human resource development that places competency, not position or tenure, as the primary basis for designing, implementing, and evaluating all employee development programs. This approach is rooted in a strong intellectual tradition, beginning with the work of McClelland (1973), developed by Boyatzis (1982) in *The Competent Manager*, and refined by Spencer & Spencer (1993) in *Competence at Work*. Wibowo et al. (2024) emphasized that competency-based development helps organizations identify competency gaps in a structured manner, namely the difference between the competency profile required for a position (required competency profile) and the actual competency profile possessed by employees (actual competency profile), and design targeted development interventions to close the gap.

The most comprehensive competency-based development model was proposed by Lucia & Lepsinger (1999) in *The Art and Science of Competency Models*, which identified six stages of implementation: (1) identification of critical competencies through job analysis and industry benchmarking; (2) development of an operational and measurable competency dictionary; (3) assessment of employee competencies using multiple methods (tests, simulations, 360-degree feedback); (4) identification of gaps and prioritization of development; (5) design and implementation of personalized development programs; and (6) evaluation of program effectiveness using the Kirkpatrick (1994) model that measures impact at four levels: reaction, learning, behavior, and business results.

In the digital context, the concept of a digital competency framework is becoming increasingly important. The European Commission (2022) has developed DigComp 2.2, a comprehensive digital competency framework covering five key areas: (1) information and data literacy, (2) communication and collaboration, (3) digital content creation, (4) safety, and (5) problem solving. This framework has been adopted by various organizations worldwide

as a reference standard in designing employee digital competency development programs.

A meta-analysis of over 150 longitudinal studies by Noe et al. (2014) in the *Journal of Management* found that competency-based development programs integrated with performance management systems resulted in an average 32% greater increase in employee performance compared to traditional non-competency-based training programs. Furthermore, Bersin by Deloitte (2022) found that organizations that adopt a comprehensive CBD approach are eight times more likely to respond quickly to market changes because they have a clear competency map and can identify gaps early. At the micro level, the CBD approach has also been shown to significantly increase employee engagement. When employees clearly understand the competencies, they need to develop, receive specific feedback, and see a transparent, competency-based career path, their intrinsic motivation levels increase substantially. This aligns with Deci & Ryan's (2000) Self-Determination Theory, which emphasizes that autonomy, competence, and relatedness are basic human psychological needs that must be met for intrinsic motivation to thrive.

## METHODOLOGY

This study used an exploratory descriptive qualitative approach because it allows for an in-depth understanding of Human Capital Development strategies in the context of digital transformation (Creswell, 2014). Data were collected through in-depth interviews with HR managers, learning development leaders, and employees, supported by observations and documentation of digital competency development programs. Data analysis was conducted using the Miles, Huberman, and Saldaña (2014) model, through data reduction, data presentation, and conclusion drawing. Data validity was maintained through triangulation of sources and methods.

## RESEARCH RESULT

### *Human Capital Development Strategy in Digital Transformation*

The research results show that the organizations studied have implemented various Human Capital Development (HCD) strategies in response to the demands of digital transformation. These strategies are no longer conventional, but have shifted toward a more adaptive, technology-based, and competency-oriented approach.

#### **1. Implementation of Adaptive Learning and Digital Learning Ecosystem**

Key findings indicate that organizations have developed digital learning ecosystems that utilize Learning Management Systems (LMS), microlearning, and Artificial Intelligence-based learning platforms. This system enables a more flexible, personalized, and needs-based learning process. Employees no longer undergo uniform training but receive learning recommendations based on their individual competency gaps. This aligns with the Competency-Based Development (CBD) concept, which emphasizes personalized competency development. Empirically, employees stated that this learning model increases learning effectiveness because the material is more relevant to the job; learning time is more flexible; and real-time feedback is available. However, obstacles

remain in the form of low levels of self-learning discipline among some employees, indicating that learning transformation requires not only technology but also a change in mindset.

## **2. Implementation of Competency Mapping and Digital Competency Framework**

The organization has systematically conducted competency mapping to identify digital competency gaps. This mapping includes: digital technical competencies (data analytics, AI literacy, digital tools); cognitive competencies (critical thinking, problem solving); and social competencies (virtual collaboration, digital communication). The mapping results indicate a significant digital competency gap, particularly among senior employees who have difficulty adapting to new technologies. This approach reflects the implementation of Human Capital Theory (Becker), where investment in competency development is a key strategy for increasing productivity.

## **3. Reskilling and Upskilling Programs Based on Business Needs**

Another strategy identified was the development of reskilling and upskilling programs integrated with business needs. These programs focused on: Transforming administrative roles into analytical roles; Strengthening basic to advanced digital skills; and Developing project-based competencies (project-based learning). Employees previously working in routine functions were transitioned to more strategic roles through intensive training. This demonstrates that the organization is not only striving to retain its workforce but also to transform its capabilities.

## **4. Integration of Digital Mentoring and Collaborative Learning**

In addition to formal training, the organization also developed digital-based mentoring and collaborative learning. Senior and junior employees were paired in a knowledge-sharing process, both through digital platforms and communities of practice. Findings indicate that this approach is effective in: Accelerating knowledge transfer; Increasing employee engagement; and Reducing resistance to change. This reinforces the concept of dynamic capability in the RBV, where organizations are able to integrate and distribute knowledge effectively.

### *Factors that influence influence the effectiveness of Human Capital Development strategies in the context of digital transformation*

The research results identified that the effectiveness of Human Capital Development implementation is influenced by several key factors that interact with each other.

#### **a. Digital Organizational Culture (Digital Culture Readiness)**

The most dominant factor is organizational cultural readiness. Organizations with a learning culture and openness to change demonstrate a higher success rate in HCD implementation. Conversely, resistance to technology, especially from the older generation, is a major obstacle. This reinforces the finding that digital transformation failures are more caused by human factors than technology.

**b. Leadership Support (Leadership Commitment)**

Leadership commitment is a determining factor in the success of a HCD strategy. Leaders with a digital mindset tend to: Encourage innovation; Provide space for experimentation; Support investment in training.

On the other hand, the lack of management support causes development programs to become merely an administrative formality.

**c. Learning Infrastructure and Technology**

The availability of digital infrastructure such as an LMS, collaboration platforms, and learning tools significantly impacts the effectiveness of HCD programs. Organizations with adequate infrastructure are able to create more interactive and sustainable learning experiences. However, some systems have been found to be poorly integrated, hindering employee access and utilization.

**d. Program Suitability with Industry Needs**

The effectiveness of HCD is also influenced by the relevance of training programs to job needs. Programs designed without considering actual needs tend to have little impact. This demonstrates the importance of alignment between business strategy and human resource development, as explained in the Resource-Based View (RBV).

**e. Individual Employee Characteristics**

Individual factors such as learning motivation, adaptability, and initial digital literacy also influence the success of HCD programs. Employees with a growth mindset demonstrate significantly higher levels of competency improvement than those with a fixed mindset.

*Contributions of Human Capital Development to employee digital competency readiness*

The research results show that Human Capital Development makes a significant contribution to increasing employees' digital competency readiness.

**a. Improving Digital Literacy**

Employees demonstrate increased skills in: Use of digital tools; Basic data analysis; Utilization of technology in work.

This shows that investment in digital training has a real impact on improving technical competencies.

**b. Increased Adaptability and Agility**

In addition to technical competency, HCD also improves employees' adaptability to change. Employees become more: Flexible in dealing with change; Quick to learn new technologies; Responsive to work dynamics. These findings indicate that HCD not only improves hard skills but also soft skills, which are crucial in the digital age.

**c. Improving Performance and Productivity**

Organizations report increased work productivity after implementing HCD programs. This is evident in: Work process efficiency; Data-driven decision-making; and improved output quality. These contributions align with Human Capital Theory, which states that investments in human resources yield returns in the form of increased productivity.

**d. Skill Gap Reduction**

One of HCD's key contributions is the narrowing of the digital competency gap. While not completely eliminated, the gap has become more manageable and measurable.

**e. Increasing Employee Engagement and Retention**

Relevant and targeted development programs increase employee engagement. Employees feel: More valued; Have opportunities for growth; Have a clear career path. This results in increased employee loyalty and retention. Overall, the research findings confirm that Human Capital Development is a key factor in the success of digital transformation. However, several important findings include:

1. Digital transformation fails not because of technology, but because people are not ready.
2. Many organizations are still in the early adoption stages of digital HCD.
3. Training programs are often not fully competency-based.

The generation gap is a serious challenge in human resource development.

**CONCLUSIONS AND RECOMMENDATIONS**

Based on the research results and discussion, it can be concluded that Human Capital Development (HCD) plays a strategic and fundamental role in improving employee competency readiness in facing digital transformation. Digital transformation not only requires the adoption of technology but also requires human resources who are able to adapt quickly to dynamic and complex changes. First, an effective Human Capital Development strategy in the context of digital transformation is characterized by the application of a competency-based approach integrated with technology. The implementation of adaptive learning, competency mapping, and reskilling and upskilling programs has been proven to help organizations identify and close digital competency gaps in a more systematic and targeted manner. Furthermore, the integration of digital mentoring and collaborative learning strengthens the knowledge transfer process and increases employee engagement in the learning process.

Second, the effectiveness of HCD strategy implementation is heavily influenced by several key factors, namely an organizational culture that supports continuous learning, strong leadership commitment, technological infrastructure readiness, the alignment of training programs with business needs, and individual employee characteristics. These factors interact with each other and determine the success or failure of HR development programs in supporting digital transformation. Third, Human Capital Development contributes significantly to improving employee digital competency readiness, both in technical and non-technical aspects. Improved digital literacy, adaptability, and work productivity demonstrate that investment in HR development has a real impact on organizational performance. Furthermore, HCD also plays a role in reducing the competency gap and increasing employee engagement and retention. Overall, this study confirms that the success of

digital transformation is highly dependent on an organization's ability to strategically manage and develop human capital. Therefore, organizations need to shift from conventional training approaches to competency-based learning ecosystems that are adaptive, sustainable, and aligned with the needs of the future of work.

### **FURTHER STUDY**

This research still has limitations so further research on this topic is still necessary "Human Capital Development Strategy in Improving Employee Competence Readiness to Face Digital Transformation".

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