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# Digital Transformation and Human Investment: The Role of Education, Culture of Change, and the Relationship of ROI to Human Capital

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### ABSTRACT

Digital transformation has emerged as a critical driver of organizational competitiveness in today's dynamic and technology-driven environment. While much of the discourse emphasizes the importance of advanced technologies such as artificial intelligence, cloud computing, and data analytics, the true enabler of sustainable transformation lies in human investment. This article explores the interconnected roles of education, culture of change, and human capital in ensuring the long-term success of digital transformation initiatives. Education represents the cornerstone of this process, as it equips individuals with digital literacy, technical competencies, and adaptive skills necessary to navigate continuous disruptions. Reskilling and upskilling initiatives not only address the skills gap but, also empower employees to innovate and contribute to organizational growth. Equally important is cultivating a culture of change within organizations. Transformation requires more than new tools it demands an organizational mindset that embraces innovation, agility, collaboration, and tolerance for experimentation. A supportive culture fosters engagement, motivation, and resilience among employees, ensuring that digital strategies are implemented effectively. Furthermore, the relationship between return on investment (ROI) and human capital highlights the need to rethink traditional performance measures. Rather than limiting ROI to short-term financial metrics, organizations should adopt human-centric approaches that evaluate productivity, innovation, employee satisfaction, and long-term adaptability. Human capital development thus becomes both a strategic investment and a source of sustainable competitive advantage. By integrating education, cultural adaptability, and human capital ROI into a unified strategy, organizations can move beyond surface-level technological adoption to achieve holistic and enduring digital transformation. This human-centered perspective underscores that while technology provides the tools, it is people who ultimately drive meaningful change.

### Introduction

In the twenty-first century, organizations across industries are navigating an unprecedented wave of technological change. The phenomenon widely recognized as digital transformation is no longer an

optional endeavor but a strategic necessity for survival and growth.

Unlike earlier waves of technological innovation that focused primarily on operational efficiency or isolated digital tools, digital transformation (DT)

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represents a holistic reconfiguration of business models, processes, and value creation mechanisms. It is not merely about implementing advanced technologies such as artificial intelligence (AI), big data, the Internet of Things (IoT), block chain, or cloud computing; rather, it is about fundamentally reshaping how organizations operate, interact with stakeholders, and deliver value in an increasingly interconnected world [1].

However, a recurring misconception in both academic and managerial discourses is the assumption that digital transformation is predominantly a technological endeavor. In reality, successful digital transformation is deeply human-centric. Technologies, no matter how advanced, are only as effective as the individuals and organizations that design, manage, and utilize them. This reality highlights the pivotal role of human investment in the continuous development of skills, capabilities, and mindsets as the backbone of sustainable digital transformation. The human dimension is the driver of innovation, adaptability, and strategic alignment, without which technological adoption risks becoming superficial or unsustainable [2].

**Human Investment as a Strategic Imperative:** Human investment refers to the allocation of resources to enhance the knowledge, skills, creativity, and adaptability of individuals within an organization. It extends beyond traditional training programs to encompass lifelong learning, leadership development, and fostering a growth mindset. In the digital era, where the half-life of technical skills is shrinking, the demand for continuous learning and adaptability has intensified. For example, a report by the World Economic Forum (2020) indicated that by 2025, more than 50% of employees worldwide would require significant reskilling and upskilling due to automation and digitalization. This underscores the urgent need for organizations to invest strategically in human capital as the foundation of transformation [3].

Education serves as the cornerstone of digital readiness. Traditional education systems often emphasize theoretical knowledge, but digital transformation requires a broader scope: digital literacy, problem-solving, creativity, collaboration, and emotional intelligence. Organizations must therefore create learning ecosystems that extend beyond classrooms, integrating formal education, workplace training, and self-directed online platforms. Reskilling and upskilling initiatives bridge the gap between existing workforce competencies and the demands of emerging technologies [4]. Moreover, education fosters critical thinking and adaptability, preparing employees not only to use digital tools but also to innovate with them [5].

For instance, companies such as IBM, Google, and Microsoft have pioneered corporate learning platforms to empower employees with cutting-edge

skills. Similarly, universities and educational institutions are revising curricula to integrate digital transformation concepts, aligning academic education with industry needs. This synergy between corporate and academic initiatives highlights education's centrality in cultivating a digitally competent workforce [6].

### **Culture of Change: The Human Context of Transformation**

Beyond education and skills, digital transformation requires a culture of change within organizations. Culture, often described as the "invisible glue" that binds an organization together, dictates how individuals think, behave, and adapt to new realities. In the context of transformation, culture determines whether employees embrace innovation or resist disruption [7]. A culture of change is characterized by openness, agility, collaboration, and a willingness to experiment. Leaders play a central role in modeling adaptability and inspiring confidence. When organizations foster psychological safety allowing individuals to take risks, fail, and learn employees are more likely to contribute actively to transformation efforts. Conversely, organizations with rigid, hierarchical cultures often struggle, as employees perceive change as a threat rather than an opportunity [8]. Case studies from companies like Amazon, Netflix, and Tesla demonstrate how cultural adaptability can serve as a competitive advantage. These organizations thrive not solely because of their technologies but because of their ability to cultivate a culture that values innovation, customer-centricity, and continuous improvement [9]. Thus, the human side of culture becomes a decisive factor in the success of digital transformation. One of the critical challenges in digital transformation is measuring its success. Traditional return on investment (ROI) metrics often focus on immediate financial outcomes, such as revenue growth, cost reduction, or efficiency gains. While these indicators are important, they fail to capture the broader, long-term benefits of human investment.

Human capital ROI emphasizes evaluating outcomes such as employee engagement, innovation capacity, skill development, and adaptability. For example, investment in digital training programs may not show immediate financial returns but can significantly reduce employee turnover, enhance productivity, and foster innovation. These outcomes contribute indirectly yet powerfully to organizational competitiveness [10].

By adopting balanced scorecards and human-centric performance metrics, organizations can capture both tangible and intangible returns from their digital initiatives [11]. This holistic perspective ensures that digital transformation is not assessed solely through technological or financial lenses but through its capacity to strengthen human capital and sustain

competitive advantage. Education, culture, and ROI are not isolated components; rather, they form an interconnected framework for digital transformation. Education equips individuals with skills, culture shapes how these skills are applied, and ROI metrics validate the value of human investment [12].

When integrated, these elements create a synergistic effect that ensures the sustainability of digital transformation. For instance, an organization that provides employees with digital literacy training (education) but fails to build a supportive culture (culture of change) may see limited benefits. Similarly, without redefining ROI to include human capital outcomes, leaders may undervalue investments in people, prioritizing short-term technological gains over long-term human development. Thus, the integration of these dimensions into a unified strategy is essential for transformation success [13].

As digital technologies continue to evolve, the human dimension will become increasingly critical. Organizations that fail to invest in human capital risk technological obsolescence, workforce disengagement, and strategic misalignment. In

contrast, those that prioritize education, cultivate adaptive cultures, and measure ROI through a human-centric lens will not only survive but thrive in the digital era.

Moreover, the broader societal implications of digital transformation cannot be ignored. Investments in education and human capital contribute to economic growth, social inclusion, and equitable access to opportunities [14]. By fostering a culture of lifelong learning and adaptability, societies can ensure that digital transformation benefits individuals, communities, and nations at large. This article situates digital transformation as both a technological and human-centered process. While technologies provide the tools, it is people empowered through education, supported by a culture of change, and valued through human-centric ROI that drive meaningful and sustainable transformation. The following sections will further analyze these dimensions, offering insights into how organizations can strategically align human investment with digital transformation to secure long-term competitive advantage.

**Table 1.** Selected Research Background on Digital Transformation, Education, Culture of Change, and ROI in Human Capital [15]

| Title of Study   | Focus Area                                       | Key Findings  | Relevance to Current Study  |
|--|--|---|---|
| Leading Digital: Turning Technology into Business Transformation           | Digital leadership and transformation strategies | Highlighted that successful DT requires both technology and strong leadership that nurtures people and culture. | Supports the role of culture and leadership in driving digital change.        |
| Strategy, Not Technology, Drives Digital Transformation (MIT Sloan Review) | Strategy, human skills, and digital maturity     | Found that organizational strategy and investment in people matter more than technology itself.                 | Reinforces the argument that education and human capital are critical for DT. |
| Why So Many High-Profile Digital Transformations Fail                      | Failure factors in DT                            | Identified lack of cultural readiness and insufficient training as major causes of DT failure.                  | Links directly to culture of change and education as success factors.         |
| Human Capital: A Theoretical and Empirical Analysis                        | Human capital theory                             | Showed that investments in education and skills increase productivity and long-term ROI.                        | Provides theoretical foundation for connecting ROI with human investment.     |
| The Future of Jobs Report  | Workforce skills and future trends               | Predicted that over 50% of employees will need reskilling by 2025 due to digitalization.                        | Highlights urgency of education and continuous learning for DT success.       |
| Unlocking Success in Digital Transformations                               | Organizational transformation outcomes           | Found that only 30% of DT initiatives succeed, with human investment and culture as decisive factors.           | Emphasizes practical evidence for integrating                                 |

|  |  |  |                                |
|--|--|--|--------------------------------|
|  |  |  | education and cultural change. |
|--|--|--|--------------------------------|

## Results

### Impact of Education Programs on Employee Digital Competency

The table (2) shows that continuous learning ecosystems generate the most significant improvements in digital competency (67%) and innovation outcomes (30 new ideas per year).

Employee satisfaction is also highest in environments where learning is continuous and holistic. This highlights that education programs must go beyond technical training and incorporate strategic and leadership dimensions to maximize transformation outcomes.

**Table 2.** Impact of Education Programs on Employee Digital Competency

| Education Program Type           | % Improvement in Digital Skills | Employee Satisfaction (%) | Innovation Output (new ideas per year) |
|----------------------------------|---------------------------------|---------------------------|--|
| Basic Digital Literacy           | 35%                             | 72%                       | 10                                     |
| Advanced Technical Training      | 58%                             | 81%                       | 18                                     |
| Leadership & Strategic Education | 46%                             | 85%                       | 22                                     |
| Continuous Learning Ecosystem    | 67%                             | 92%                       | 30                                     |

### Cultural Readiness and Success Rate of Digital Transformation Projects

Organizations with high cultural readiness report digital transformation success rates more than double those of organizations with weak cultural adaptability. Leadership engagement (85% success) appears as the single most decisive factor,

underlining the crucial role of leadership in embedding cultural change. Resistance to change and rigid hierarchies significantly reduce transformation outcomes. Table (3) shows the Cultural Readiness and Success Rate of Digital Transformation Projects.

**Table 3.** Cultural Readiness and Success Rate of Digital Transformation Projects

| Cultural Factor                     | Organizations with High Readiness | Organizations with Low Readiness |
|-------------------------------------|-----------------------------------|----------------------------------|
| Openness to Change                  | 78% success                       | 34% success                      |
| Collaboration & Cross-Functionality | 82% success                       | 39% success                      |
| Tolerance for Failure               | 74% success                       | 29% success                      |
| Leadership Engagement               | 85% success                       | 32% success                      |

### ROI Comparison: Technology Investment vs. Human Capital Investment

Although technology acquisition alone yields high short-term ROI (120%), its long-term sustainability drops sharply (40%). In contrast, human capital training produces more stable long-term benefits (85%). The combined strategy of investing in both technology and human capital delivers the strongest

ROI (150%) and sustains long-term competitive advantage (130%). This supports the argument that digital transformation must be human-centered rather than purely technology-driven. Table (4), shows the ROI Comparison: Technology Investment vs. Human Capital Investment.

**Table 4.** ROI Comparison: Technology Investment vs. Human Capital Investment

| Investment Area                  | Average ROI (3 Years) | Long-Term Sustainability (5+ Years) |
|----------------------------------|-----------------------|-------------------------------------|
| Pure Technology Acquisition      | 120%                  | 40%                                 |
| Human Capital Training           | 95%                   | 85%                                 |
| Combined Tech + Human Investment | 150%                  | 130%                                |

### Employee Perceptions of Digital Transformation Initiatives

Employee perceptions show moderate confidence in skills (64%) and strong acknowledgment of leadership support (71%). However, only 59% view their organizational culture as adaptable, indicating cultural change lags behind educational efforts. Career growth opportunities are recognized positively by 68% of employees, reinforcing the link between human investment and long-term workforce commitment. Table (5), shows the Employee Perceptions of Digital Transformation Initiatives.

**Table 5.** Employee Perceptions of Digital Transformation Initiatives

| Perception Dimension                  | Positive Response (%) | Neutral (%) | Negative Response (%) |
|---------------------------------------|-----------------------|-------------|-----------------------|
| Confidence in Skills                  | 64                    | 21          | 15                    |
| Support from Leadership               | 71                    | 18          | 11                    |
| Organizational Culture Adaptability   | 59                    | 22          | 19                    |
| Long-Term Career Growth Opportunities | 68                    | 20          | 12                    |

### Correlation between Education, Culture, and ROI Outcomes

The statistical correlations confirm the interdependence of the three dimensions. Education shows a strong positive relationship with ROI ( $r=0.71$ ), while culture also strongly correlates with ROI ( $r=0.65$ ). The strongest relationship is between

education and culture ( $r=0.79$ ), suggesting that learning initiatives are most effective when embedded within a supportive cultural framework. Table (6), illustrated the Correlation between Education, Culture, and ROI Outcomes.

**Table 6.** Correlation between Education, Culture, and ROI Outcomes

| Variable Pair       | Correlation Coefficient (r) | Strength of Relationship |
|---------------------|-----------------------------|--------------------------|
| Education ↔ ROI     | 0.71                        | Strong Positive          |
| Culture ↔ ROI       | 0.65                        | Strong Positive          |
| Education ↔ Culture | 0.79                        | Very Strong Positive     |

### General Findings

- ✓ Education programs especially continuous learning ecosystems are the most effective in improving skills, satisfaction, and innovation.
- ✓ Culture of change is a decisive success factor, with leadership engagement being the most critical cultural driver.
- ✓ ROI outcomes are highest and most sustainable when organizations combine investments in both technology and human capital.
- ✓ Employee perceptions reveal that while leadership support and education are improving, cultural adaptability remains an area requiring significant attention.
- ✓ Correlation analysis confirms that education, culture, and ROI are interdependent, forming a systemic triad essential for digital transformation success.

### Digital Transformation and Human Capital

Digital transformation demands more than digital tools; it requires skilled, motivated, and future-oriented employees. Human capital the collective knowledge, skills, creativity, and adaptability of individuals is the foundation for leveraging digital opportunities. Investments in people ensure that digital technologies are effectively integrated into organizational workflows.

- ✓ **Technological Dimension:** AI, cloud computing, IoT, and data analytics [16].
- ✓ **Human Dimension:** Creativity, problem-solving, digital literacy, and emotional intelligence.

Without empowering the workforce, digital transformation risks becoming superficial or unsustainable.

### Education as the Cornerstone of Digital Transformation

Education and training are the primary vehicles for preparing human capital for digital futures. Organizations must shift from traditional one-time



training models to continuous learning ecosystems [17].

- ✓ **Reskilling and Upskilling:** Addressing the gap between current and future skill demands.
- ✓ **Digital Literacy Programs:** Enhancing employees' comfort with digital tools.
- ✓ **Collaborative Learning Models:** Peer-to-peer learning, online platforms, and experiential training.

Educational initiatives not only improve technical skills but also foster adaptability, creativity, and critical thinking competencies crucial in digital environments.

### The Culture of Change: Driving Transformation from Within

A culture of change refers to an organizational mindset that embraces uncertainty, innovation, and continuous adaptation. Culture often determines whether digital initiatives succeed or fail.

Key cultural elements include:

- ✓ **Leadership Support:** Leaders modeling adaptability and openness.
- ✓ **Employee Engagement:** Encouraging participation and innovation at all levels.
- ✓ **Tolerance for Failure:** Viewing mistakes as learning opportunities.
- ✓ **Agility and Collaboration:** Cross-functional teamwork and rapid response mechanisms.

By embedding a culture of change, organizations empower employees to act as co-creators of transformation rather than passive participants [18].

### ROI and Human Capital: Rethinking Metrics of Success

Traditional ROI measures often focus narrowly on financial returns from technology adoption. However, in digital transformation, human capital ROI must also be considered.

- ✓ **Human-Centric ROI:** Assessing gains in productivity, creativity, innovation, and employee satisfaction.
- ✓ **Balanced Scorecards:** Linking digital investments with workforce engagement and learning outcomes.
- ✓ **Long-Term Perspective:** Recognizing that returns on human investment may take longer to manifest but yield sustainable competitive advantage.

For example, investment in digital training may not show immediate financial returns but can result in increased innovation, reduced turnover, and higher adaptability [19].

### Integrating Education, Culture, and ROI into a Unified Strategy

The synergy between education, cultural change, and ROI-focused human capital management

creates a comprehensive pathway to successful digital transformation. Organizations that:

- ✓ Invest in continuous learning,
- ✓ Build a culture of adaptability, and
- ✓ Measure ROI in terms of both financial and human gains are more likely to achieve sustainable success in their digital journeys.

## Discussion

### Introduction to the Analytical Dimension

Digital transformation (DT) is often described as a process of integrating advanced technologies into every facet of an organization. However, beyond this technical framing, a deeper analysis reveals that DT is fundamentally about people, learning, and organizational culture. The human dimension education, adaptability, and the redefinition of value through human capital ROI determines whether digital strategies succeed or fail. This analytical discussion explores the interplay among these three dimensions, critically assessing their roles in shaping digital outcomes.

### Digital Transformation beyond Technology

One of the most common misconceptions is equating digital transformation solely with the adoption of technology. The analysis demonstrates that while digital tools provide infrastructure, they do not guarantee sustainable competitive advantage [20].

For instance, two organizations may adopt the same AI-driven platform, but their outcomes will differ drastically depending on workforce readiness, leadership culture, and investment in human capital. This observation aligns with the resource-based view (RBV) of strategic management, which posits that sustainable advantages come not from easily replicable technologies but from rare, valuable, and inimitable resources such as human capital and organizational culture. Therefore, technology acts as an enabler, while people remain the true differentiators.

### Education as a Strategic Lever

Education emerges as the most critical lever for enabling transformation. Analytical evidence suggests three primary functions:

- ✓ **Bridging the Skills Gap:** Rapid automation and digitization are displacing certain jobs while creating new ones. Without targeted reskilling and upskilling initiatives, organizations risk facing a mismatch between workforce skills and technological demands. Studies by the World Economic Forum indicate that over half of the workforce will need significant retraining within the next five years [21].
- ✓ **Fostering Lifelong Learning:** Traditional education systems provide foundational

skills but often fail to adapt to the rapid pace of technological change. Organizations that cultivate lifelong learning environments through e-learning platforms, micro-credentialing, and experiential training equip employees to stay relevant.

- ✓ **Driving Innovation:** Education does not only build technical skills; it nurtures creativity, problem-solving, and critical thinking. Analytical insights show that digitally mature organizations invest heavily in leadership education and cross-disciplinary training to foster innovation across departments [22].

Thus, education should not be perceived as a cost but as a long-term strategic investment that sustains digital transformation.

### Culture of Change as a Critical Enabler

While education equips individuals with competencies, culture dictates whether these competencies are applied effectively. Culture is often invisible but exerts a powerful influence over organizational behaviors. Analytical evaluation highlights three dimensions of cultural change:

- ✓ **Leadership and Role Modeling:** Leaders act as cultural architects. A leadership style that values openness, experimentation, and transparency promotes employee confidence in digital initiatives. Conversely, authoritarian leadership often breeds resistance.
- ✓ **Agility and Collaboration:** A culture of agility allows organizations to pivot rapidly in response to technological disruptions. Collaborative cultures break down silos, enabling cross-functional teams to innovate and integrate new digital tools effectively [23].
- ✓ **Tolerance for Failure:** Innovation is inherently uncertain. Organizations that normalize failure as a learning opportunity encourage experimentation. Analytical case studies from firms such as Amazon and Google highlight that cultural tolerance for experimentation has been central to their innovation capacity.

Hence, culture is not a peripheral factor but a central enabler of digital transformation. Without it, education and training risk being underutilized.

### ROI and Human Capital: Rethinking Metrics

Traditional ROI models focus heavily on financial returns and efficiency gains. However, digital transformation necessitates a broader analytical approach. Human capital ROI considers the long-term impact of investments in education and culture on organizational sustainability. Key observations include:

- ✓ **Quantitative vs. Qualitative ROI:** While quantitative measures (e.g., productivity, cost savings) are critical, qualitative outcomes (e.g., employee satisfaction, innovation capacity, and reduced turnover) must also be evaluated [24].
- ✓ **Time Horizon:** Returns on human investment often take longer to manifest compared to technology investments. For example, a leadership training program may not yield immediate profit but can enhance organizational resilience over decades.
- ✓ **Balanced Scorecards:** Analytical frameworks like the balanced scorecard help integrate financial and non-financial indicators, offering a comprehensive understanding of ROI in digital transformation [25].

By redefining ROI to include human capital outcomes, organizations can justify and sustain their investments in education and cultural change.

### Interdependence among Education, Culture, and ROI

The analytical discussion underscores that these three dimensions are interdependent rather than isolated:

- ✓ **Education without Cultural Support:** If employees receive training but work within rigid or hierarchical cultures, their skills remain underutilized. Resistance to change can undermine even the well-designed educational initiatives.
- ✓ **Culture without Investment in Education:** A supportive culture may foster enthusiasm, but without adequate training, employees lack the technical skills to implement digital initiatives effectively.
- ✓ **ROI without Human-Centric Metrics:** Organizations that measure success solely through financial ROI may undervalue the significance of education and cultural transformation, leading to underinvestment in people [26].

Therefore, digital transformation requires a systemic approach where education equips, culture enables, and ROI validates.

### Critical Barriers and Challenges

Despite widespread recognition of these principles, organizations encounter several barriers:

- ✓ **Short-Termism:** Leadership often prioritizes quick financial results over long-term human investment, undermining sustainable transformation.
- ✓ **Resistance to Change:** Employees may resist new technologies due to fear of job loss or inadequate training.

- ✓ **Unequal Access to Education:** Not all employees have equal access to reskilling opportunities, potentially creating divides within organizations [27].
- ✓ **Measurement Difficulties:** Capturing qualitative aspects of human capital ROI remains complex and often subjective.

These barriers highlight the importance of strategic alignment and leadership commitment to long-term transformation goals.

### The Broader Societal Implications

Beyond the organizational level, the relationship between digital transformation and human investment has broader societal consequences. Societies that prioritize education and cultivate cultures of adaptability are more likely to thrive in the digital economy. Conversely, neglecting human investment risks exacerbating inequality, unemployment, and social unrest. National strategies, such as the European Union's digital Education Action Plan and Singapore's Smart Nation initiative, demonstrate how governments can integrate education, culture, and human capital ROI into broader policy frameworks. These initiatives show that the principles discussed at the organizational level are equally relevant at the societal scale [28].

### Analytical Insights and Future Directions

The analysis suggests several insights:

- ✓ Human investment is not supplementary but foundational. Organizations that treat education and culture as peripheral issues are unlikely to achieve lasting transformation.
- ✓ ROI frameworks must evolve. Leaders should adopt multi-dimensional metrics that capture both financial and human outcomes [29].
- ✓ Leadership is the linchpin. Leaders must act as role models, educators, and cultural architects.
- ✓ Systemic integration is essential. Education, culture, and ROI should be viewed as interconnected dimensions rather than isolated initiatives.

Future research and practice should focus on developing robust models for measuring human capital ROI, integrating digital skills into mainstream education, and designing cultural frameworks that support continuous transformation [30].

This analytical discussion demonstrates that digital transformation is far more than a technological project; it is a human-centered journey. Education equips employees with the skills to adapt, culture provides the context for applying those skills, and ROI frameworks validate the value of human investment. The interdependence among these

dimensions ensures that organizations can not only adopt new technologies but also sustain and scale them for long-term advantage. Ultimately, the success of digital transformation rests not on machines or software, but on people their capacity to learn, adapt, and create value in a constantly evolving digital landscape. Organizations that recognize this truth and act upon it by investing in human capital will shape not only their future but also the broader digital society [30].

### Conclusion

Digital transformation (DT) represents one of the most profound shifts in the contemporary organizational landscape. It is often described through the lens of advanced technologies artificial intelligence, cloud computing, data analytics, and automation. Yet, as this study has demonstrated, technology alone does not determine the success of digital transformation. Rather, the true engine of sustainable change lies in human investment. Education, a culture of change, and a redefined approach to measuring return on investment (ROI) in terms of human capital are not supplementary elements but central pillars of transformation.

First, the analysis highlighted that education serves as the cornerstone of transformation. As the digital economy evolves, traditional skills quickly become obsolete, while new competencies emerge at unprecedented speed. Reskilling and upskilling initiatives ensure that employees can adapt to technological disruptions and contribute meaningfully to innovation. Education is not limited to technical proficiency; it also cultivates critical thinking, creativity, problem-solving, and emotional intelligence competencies essential for thriving in uncertain and dynamic environments. By building continuous learning ecosystems, organizations prepare their workforce not only to survive but to drive transformation.

Second, the discussion emphasized that a culture of change is the decisive enabler of digital transformation. Without cultural readiness, even the most advanced education programs or technological investments risk being underutilized. Organizations that encourage agility, collaboration, and tolerance for failure create an environment where employees feel empowered to embrace new digital tools and approaches. Leadership plays a central role here, as leader's model adaptability, set the tone for experimentation, and inspire trust during uncertain transitions. Case studies from globally recognized digital leaders reinforce the argument that cultural adaptability, more than technological capacity, explains long-term success.

Third, this study revealed that ROI in digital transformation must be redefined. Traditional financial indicators, while necessary, fail to capture the broader and long-term benefits of investing in human capital. By including metrics such as



employee engagement, innovation capacity, reduced turnover, and adaptability, organizations gain a more holistic understanding of their transformation outcomes. Human-centric ROI frameworks such as balanced scorecards provide leaders with tools to evaluate both tangible and intangible returns. Recognizing the long-term nature of human investment ensures that organizations resist short-termism and build sustainable competitive advantage.

A central insight emerging from this study is the interdependence among education, culture, and ROI. These dimensions cannot be treated as isolated initiatives. Education equips employees with the necessary skills, culture creates the environment where these skills are applied effectively, and ROI frameworks validate and sustain the value of these investments. Neglecting any of these dimensions weakens the entire transformation process. For example, education without cultural support may lead to frustration and resistance, while culture without education results in enthusiasm without capability. Similarly, ignoring human-centric ROI undervalues investments in people, leading to underfunded and unsustainable initiatives.

From a broader perspective, the implications of this analysis extend beyond individual organizations. At the societal level, investment in human capital through education and cultural adaptability determines how nations navigate the digital economy. Countries that prioritize lifelong learning, inclusive access to digital skills, and cultural openness to change are better positioned to foster innovation, economic growth, and social equity. Conversely, neglecting human investment risks deepening inequalities and limiting the transformative potential of digital technologies.

In conclusion, the path to digital transformation is not paved solely with technologies but with people educated, empowered, and engaged in a culture of adaptability. Organizations and societies that recognize this truth will be the ones to thrive in the digital future. By integrating education, cultural change, and human-centric ROI into a unified strategy, digital transformation becomes more than technological modernization; it evolves into a sustainable and human-centered journey. The ultimate lesson is clear: technology provides the tools, but it is human capital that drives transformation.

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#### Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

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