# Digital HR for Sustainable Value Chains: Bridging Tech Maturity and Green Talent in Emerging Economies

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**Abstract**

The purpose of this paper is to examine how digital human resource (HR) maturity levels influence green talent development within sustainable supply chain management (SSCM) in emerging economies. At a critical juncture where organisations seek to integrate sustainability goals with technological advancement, this study investigates the strategic role of digital HR in cultivating green talent pipelines that support sustainable value chains. Design/methodology/approach following a comparative framework approach, this study develops a novel Digital HR-Green Talent Integration (DHGTI) model by analyzing technology adoption patterns and green competency requirements across emerging market contexts. The research synthesizes existing literature on digital transformation, green human resource management, and sustainable supply chains to identify convergence points and strategic imperatives. Findings the study reveals that organisations with higher digital HR maturity demonstrate superior capabilities in identifying, developing, and retaining sustainability-focused talent. However, significant gaps exist between technological capabilities and green talent cultivation, particularly in small and medium enterprises (SMEs) within emerging economies. The research identifies four distinct maturity stages that organisations traverse when integrating digital HR with green talent strategies. Originality/value before the recent literatures are concerned, this paper is the first to establish a full framework linking digital HR maturity with green talent development specifically for emerging economy contexts. Thus, the paper will offer a strategic roadmap to practitioners, enabling them to leverage technology to build sustainable workforce capabilities that victimize the peculiar challenges faced by organisations in developing markets.

**Keywords**

Digital HR, Green Talent, Sustainable Supply Chains, Emerging Economies, HR Technology Maturity

## 1. Introduction

The current business environment is throwing a taller question at organisations: How can companies from emerging economies leverage digital HR technologies to build sustainable talent capacities for supporting green value chains? That very basic question serves as the focal point for our research, looking at the cross-section between technological developments and sustainability imperatives in HR. Environmental stewardship is becoming an important consideration in organisations, and with this, the strategic role of digital HR in the development of green competencies becomes an important consideration [1].

This transformation has faced some distinctive challenges in developing economies that emerged and set them apart from their developed counterparts. Usually, developed markets have supported technological infrastructure in place and sustainable frameworks to follow through. However, emerging markets have had to negotiate the nature of digital transformation itself alongside environmental responsibility, all in the face of scarce resources and a shifting letter of law [2]. This double whammy has indeed brought about unique opportunities for organisations to leapfrog the traditional stages of development by immediately knitting together digital HR capabilities with green talent strategies.

The greater need for this integration is exacerbated if one considers the increasing pressure imposed on global supply chains to be environmentally accountable. Consumers, investors, and regulatory agencies want to know whether an organization has followed the best environmental practices and put into place the systems by which sustainability performance levels of their organisations can be measured, managed, and improved. However, attaining these capabilities would require a workforce competent not only in general operational skills but also in knowledge specific to environmental sustainability.

According to Sánchez-Flores et al. [3], green talents are those who, apart from general functional competencies, also hold sustainability-specific knowledge, skills, and attitudes that allow their organisations to pursue environmental objectives. Such professionals comprehend how to infuse environmental concerns into business operations, recognize when to follow resource efficiency paths, and push innovation towards sustainable alternatives. Nevertheless, the

identification, development, and retention of such talent require highly complex HR systems capable of detecting emerging skill needs, enabling continuous learning, and measuring sustainability-performance outcomes themselves.

The capabilities of digital HR for accelerating green talent-level initiatives across complex value chains are unpreceded. From AI-recruitment systems capable of selecting candidates with sustainability competencies to learning management platforms providing environmental education at scale, these technologies form a dual-edged system that both enables and accelerates green workforce transformation [4]. These technologies analyse massive amounts of data to identify trends on green competency development, forecast future skill requirements, and market customized learning experiences to ensure maximum effectiveness vis-à-vis each learning dimension. By cost-effectiveness, cloud-based LMS integration has gained much prestige amongst organisations in need of building this digital workforce capability [5]. Yet often, going by the existing situation prevailing in many emerging markets, the untapped potentials in digital HR were immense. Infrastructure limitations, budgetary constraints, and a limited amount of digital literacy create the barriers for execution. Adding fuel to the fire are socio-cultural elements and organizational inertia towards change. Such factors impede the acceptance of new technology and practices, especially when they challenge and contradict conventional HR value systems.

This paper addresses a crucial gap in the extant literature on how digital HR maturity influences the ability of an organisations to develop and effectively deploy green talent. While prior studies and research have largely dealt with digital transformation and sustainability as separate domains, a relatively scant effort has been made to address their strategic integration within HR practice-a matter particularly relevant in the context of emerging markets-. Our research tries to fill in the gap by developing a comprehensive framework to guide organisations through their journey of integrating digital HR capabilities with green talent development strategies.

## 2. Literature Review and Theoretical Foundation

### 2.1 Digital HR Evolution in Emerging Markets

Digital HR transformation in emerging economies follows a distinct trajectory through the opportunities leapfrog offered by and against the backdrop of resource constraints. Unlike in developed countries that most often have the disadvantage of fixing legacy systems, many emerging-market organisations can implement neat digital solutions from the onset. On the other hand, building the enabling infrastructure along with developing the capacities required remains the challenge.

Research reveals that organisations in emerging markets take different levels of digital HR adoption, from basic task automation of admin processes to advanced-adjusted talent management systems that make decisions based on analytics. Adoption speed typically depends on the size of the organisations, the character of the industry, and technologically palpable resources. Lead adoption is held by big MNCs operating in emerging markets, whereas SMEs mostly trail behind owing to a lack of the resources and technical know-how.

Several certain features characterize the digital HR environment of emerging countries. It is mostly mobile-first because of widespread adoption of smartphones and the minimum set of desktop infrastructure available. Cloud-based solutions are preferred over on-prem systems because of their lower upfront cost and infrastructure requirements. Hence, social media integration becomes more prominent as organisations simultaneously leverage popular platforms for global recruitment and engagement of employees.

### 2.2 Green Talent Development Paradigms

Green talent development signifies a shift away from traditional competency models toward sustainability-integrated capability frameworks. Such an incursion sets the tone for the fact that environmental challenges have an element of specialized knowledge and skills, more than just functional expertise of their own. Green talent embeds environmental awareness, systems thinking, innovation capability, and skills for leading change in organizations toward sustainability goals.

Green talent development calls for a new approach in talent identification, assessment, and development. Traditional offers of recruitment may not filter candidates with sustainability competencies, thus new toolkits and criteria are needed; accordingly, performance management must be deployed alongside traditional business outcomes with those relating to environment as metrics [6].

Developing green talent becomes particularly tricky for emerging economies given the scarcity of sustainability education and training programs. Many emerging markets do not have established curricula in environmental management at higher education institutions, giving rise to gaps in main knowledge. Besides, with limited exposure to sustainability in business contexts, many in the professional class need to develop green competencies on the job and through experience-based programs [2].

### 2.3 Technology-Sustainability Convergence

Technology plus sustainability equals many new possibilities to solve environmental problems while achieving the business goals. Digital technology enables a much closer measurement and monitoring of environmental impacts, helps

in resource optimization, and favors innovation with sustainable solutions. In the HR context, this convergence comes about through all sorts of technologies aimed at supporting green talent development and deployment [7].

AI and ML technologies are a promising tool for green talent development. These technologies analyze complex patterns in sustainability data to identify skill gaps, forecast future competency requirements, and tailor learning. Furthermore, these technologies aid the decision-making process by revealing links between workforce competency and environmental performance outcomes [8].

At the same time, the intersection of technology and sustainability also brings challenges. The environmental impact of digital technologies themselves needs consideration because high computing demands can contribute to carbon emissions. Organizations must weigh the benefits offered by digital HR technologies against their environmental costs and seek solutions that are efficient in terms of conservation.

### 2.4 Digital HR Maturity and Green Talent Nexus

Based on the literature, digital HR maturity is the level of sophistication with which an organization uses technology for HR processes to influence decision-making and thereby produce strategic outcomes. These maturity dimensions may include data analytics capabilities, automation of routine processes, employee self-services, and integration of the HR system with the broader technology infrastructure of the organization. Hence, maturity incorporates both technological sophistication and the organization's ability to derive strategic value from HR technologies [9].

The effects of digital HR maturity on green talent development can be expected to manifest through many interconnected mechanisms that serve to increase these synergistic effects. Firstly, through advanced analytics capabilities, organisations can identify incumbent employees of latent sustainability capabilities and can project future green skills to be acquired based on the projected evolution of their business strategy. Such predictive capabilities are extremely useful in emerging markets where green talent might be in short supply, as they allow organisations to leverage the current human capital in place alongside planning for future needs. Secondly, digital learning platforms allow environmental education and certification Programmes to be delivered on a large scale, thus enabling rapid upskilling of the current workforce while cutting down on training expenses and environmental costs. On the other hand, traditional classroom-based training too often shows itself to be inefficient and resource-intensive, considering that its target audience usually is composed of geographically dispersed workforce members common in supply chain contexts. These limitations are overcome by digital platforms by offering uniform, accessible, and measurable learning experiences [10].

Thirdly, integrated HRIS allow for the tracking and measurement of sustainability performance indicators and enable organisations to relate individual-level contributions to broader environmental objectives. Such capability becomes crucial particularly in the complex supply chain contexts where sustainability results depend on coordinated effort from multiple actors and locations. Being able to measure and track the green performance of individuals and teams generates accountability and continuous improvement. Fourth, the automation of a large number of routine HR processes ensures the release of a human resource that can then be set to work on strategic initiatives such as green talent development or the development of sustainability programs. Numerous organisations in emerging markets run lean HR teams that find it difficult to balance administrative responsibilities with strategic initiatives. Digital automation might provide a fresh slant by looking at the time allocated to transactional activities and freeing up resources for activities that bring value.

Nevertheless, for these rippling effects to be realized, organisations must then go through different maturity phases, each marked by specific technological capabilities and approaches promoting green talent development. An understanding of these stages in maturity will provide the basis for a strategic planning and investment prioritization exercise in the emerging market environment, where resources generally do not allow for full-blown implementation from the outset.

Progressing through the stages is not just an evolution in technology; instead, it implies a transformational journey demanding organizational change management, skill development, and cultural diffusion. Each stage has its own peculiar challenges and opportunities that an organization must navigate carefully to gain successful integration of digital HR and green talent strategies.

## 3. The DHGTI Framework: A Comprehensive Model

Building upon the reported relationships between digital HR capabilities and green talent development, we forward the Digital HR-Green Talent Integration (DHGTI) framework. This framework has four progressive maturity stages that serve as a roadmap for organisations seeking to grow sustainability capabilities through digital HR: Foundation, Integration, Optimization, and Innovation.

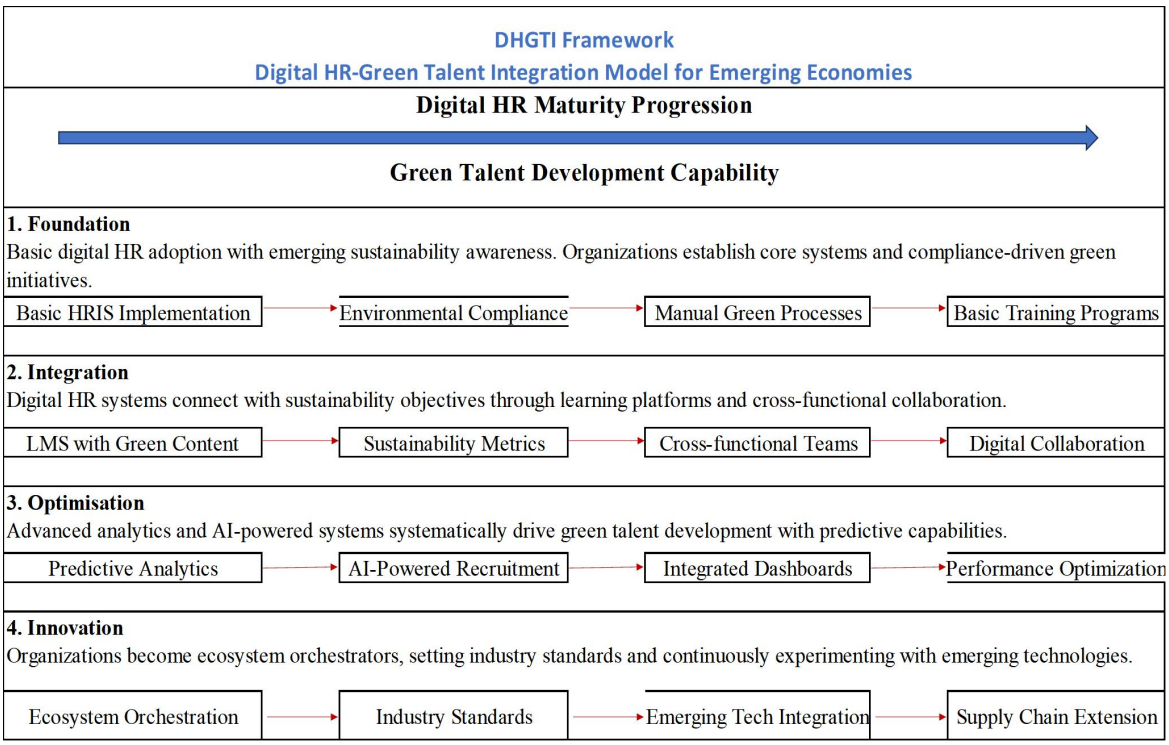


**Figure 1.** DHGTI Framework- Digital HR-Green Talent Integration Model for Emerging Economies

Figure 1 presents the DHGTI Framework - Digital HR-Green Talent Integration Model for Emerging Economies, illustrating the four-stage progression from Foundation through Innovation stages.

### 3.1 Foundation Stage: Building the Base

In the Foundation Stage, organisations begin their digital HR journeys with the adoption of a basic technology infrastructure and the nascent awareness of sustainability imperatives. At this stage, HR processes are still predominantly manual, and green initiatives are generally pursued from a compliance perspective instead of integration into the strategic plan. Organisations focus on setting up basic HR information systems and evolving basic employee awareness of environmental concerns.

Key characteristics that define the Foundation Stage are weak linkages between HR systems and sustainability initiatives, recruitment and payroll management using rudimentary digital tools, and a reactive approach to environmental compliance. Organisations in this phase confront the paradox of data silos, inconsistent processes, and lack of visibility on workforce competencies on sustainability [2]. During the Foundation Stage, the major obstacles faced are: resistance to technological change, lack of financial capability to procure systems, and insufficiency of technical knowledge within HR teams. However, many organisations in emerging markets remain trapped in this stage due to competing priorities and limitations in resources to even consider investment in advanced HR technologies.

The success factors for transmission to come after the Foundation Stage are in accomplishing leadership buy-in in both digital transformation and sustainability; constructing clear business cases for technology investment; and constructing at least preliminary digital literacy among HR professionals. Organisations must now start building an awareness of sustainability issues and how these become relevant to business success. Among the practical activities in the Foundation Stage are the implementation of basic HR information systems, training employees in sustainability awareness, setting procedures for environmental compliance, and beginning to track some bare minimum environmental indicators. This groundwork supports further efforts toward sophisticated integration in the next phase.

### 3.2 Integration Stage: Connecting Systems and Strategies

The Integration Stage refers to organisations that have basic digital HR capabilities linked with sustainability objectives. Key activities include implementation of LMS with environmental content, tracking of simple sustainability performance metrics, and establishment of cross-functional teams sharing the responsibilities between HR and environmental functions.

Organisations at the Integration Stage would have better data management capabilities; basic workforce planning analytics; and a first wave of integration between HR and sustainability systems. Such organisations begin to realize the strategic importance of green talent and invest consciously in acquiring the relevant competencies for their workforce [3]. The primary area of focus during the Integration Stage covers the connection of HR and sustainability activities that once either side of an axis-for additional synergistic effects. This necessitates breaking silos in organizations as well as

encouraging collaboration between traditionally separate functions. Organisations must also begin developing more sophisticated measurement capabilities to track progress in both digital HR maturity and green talent development.

Challenges at this level include system integration complexity, need for specialized technical skills, and Resistance from employees accustomed to traditional approaches. Organisations must manage the challenge of measuring return on investment for integrated initiatives while building capabilities for advanced stages.

Success factors during the Integration Stage include strong project management capabilities, powerful change management programs, and the development of cross-functional teams that understand HR technology and sustainability requirements. Organisations must engage in training programs that develop green and digital skills together in their workforce.

### 3.3 Optimization Stage: Maximizing Value Creation

The Optimization Stage means having organisations with mature digital HR competences systematically leveraging technology for green talent development. The organisations use predictive analytics to forecast green skill requirements, AI-powered systems for sustainability-oriented recruitment, and integrated dashboards linking workforce capabilities with environmental performance outcomes.

These organisations at the Optimization Stage possess advanced analytics capabilities, automated decision-making, and superior integration between HR and sustainability systems. By adopting data-based approaches, they optimize the management of workforce and environmental performance, thereby achieving competitive advantage through better green talent capabilities [4].

Value maximization comes to the forefront during the Optimization Stage set against an integrated digital HR and sustainability capability strategy. Organisations develop predictive models for future skill requirements, put into place automated systems that increase decision-making effectiveness and establish feedback loops for continuous improvement. Key capabilities of optimization include advanced workforce analytics, automatic monitoring of sustainability performance, predictive modeling of skill requirements, and integrated reporting systems linking workforce and environment metrics. Organisations build on this capability to develop world-class talent development Programmes supported by digital learning technologies and a sustainability competency framework.

The challenges of the Optimization Stage include managing system complexity, data quality, and the security of data; maintaining the technological advantage before other competitors acquire similar capabilities; avoiding overreliance on automated systems while preserving human judgment and creativity in strategic decision-making.

## 4. Innovation Stage: Leading Industry Transformation

The innovation stage reflects organisations leading both digital HR and sustainability practices. These organisations act as ecosystem orchestrators-parlaying their technological prowess for green talent development among supply chain partners and industry standards pertaining to sustainability competencies while experimenting continuously with emerging technologies to produce better environmental outcomes.

The Innovation Stage organisations will have advanced technological capabilities, lead industry-level sustainability practices, and are capable of driving transformation throughout the ecosystem. They come up with new approaches that would be adopted by other organisations and take an active role in promoting digital HR and sustainability. The Innovation Stage mainly works on the creation of value not only for the organisations but also for the larger ecosystem, which includes supply chain partners, industry associations, and the society at large. These organisations incite and function as platforms for innovation and knowledge dissemination such that the movement towards best practices is accelerated across the networks.

Characteristics of the Innovation Stage feature experimental adoption of technology; influence across ecosystems; thought leadership in sustainability practices; and innovation in applying technologies to HR on a continuous basis. The organisations are also beginning to explore new business models to help them monetize their green talent capabilities and sustainability expertise.

The challenges faced during the Innovation Stage include dealing with the risks of experimental technologies; reconciling their own needs with responsibilities towards the ecosystem; and keeping innovation alive while scaling practices that work. However, an additional challenge lies in the complexity of influencing change across diverse stakeholder networks with differing capabilities and motivations.

### 4.1 Emerging Economy Considerations and Contextual Factors

Emerging economies bring certain opportunities forth for digital HR green talent development that require proper evaluation in the implementation of the framework. Therefore, it is essential for organisations to grasp these contextual factors in genuinely moving ahead with integrating digital HR and sustainability initiatives.

### 4.2 Opportunities in Emerging Markets

On the opportunity side, emerging markets show an even greater willingness to adopt new technologies and practices, especially if there is a clear indication that such technologies and practices may provide competitive advantage or

efficiency. Such opportunities to innovate allow for the establishment of integrated digital HR and sustainability approaches. The disadvantage of many emerging market organisations is quite the advantage for implementing modern integrated solutions that are not possible to be implemented in organisations with extensive existing infrastructure [2].

Furthermore, a youthful demographic profile prevalent in many emerging economies is a close match for both the adoption of these digital technologies and environmental consciousness. Young workers normally are more conversant with digital technologies and show greater concern for environmental issues, hence creating a workforce naturally inclined toward integrated digital HR and sustainability programs [1].

Rapid economic growth in most emerging markets further provides opportunities for companies to invest in state-of-art candidates that will guarantee long-term competitive advantage. As these economies continue to evolve, organizations that develop leadership in digital HR and sustainability capabilities stand to gain substantial advantages over their competitors that delay such investments. Government support for digital transformation and environmental sustainability in many emerging economies poses yet another opportunity. Policy initiatives targeted at encouraging tech adoption and environmental responsibility can certainly give the incentives to organizations to invest in integrated capabilities, thereby decreasing implementation costs and risks.

### 4.3 Infrastructure and Resource Challenges

Nevertheless, we face certain constraints and challenges that require careful handling. Infrastructure limitations may well confine the deployment of advanced digital HR systems, especially in the rural or perhaps underdeveloped areas within which supply chain operations often take place. Unreliable internet connectivity, weak electrical infrastructure, and inadequate telecommunication networks may prove to be hindrances in the installation of cloud systems and mobile applications that are an integral part of any modern digital HR approach [5]. Resource constraints might be the major impediments faced by emerging market organizations. SMEs, which form the backbone of most supply chains in emerging economies, may not possess enough financial resource capacity or technical know-how to implement advanced digital HR systems. The situation thus calls for down-to-earth methods that are scalable and cheap yet capable of delivering cogent green talent development outcomes without demanding major upfront investments.

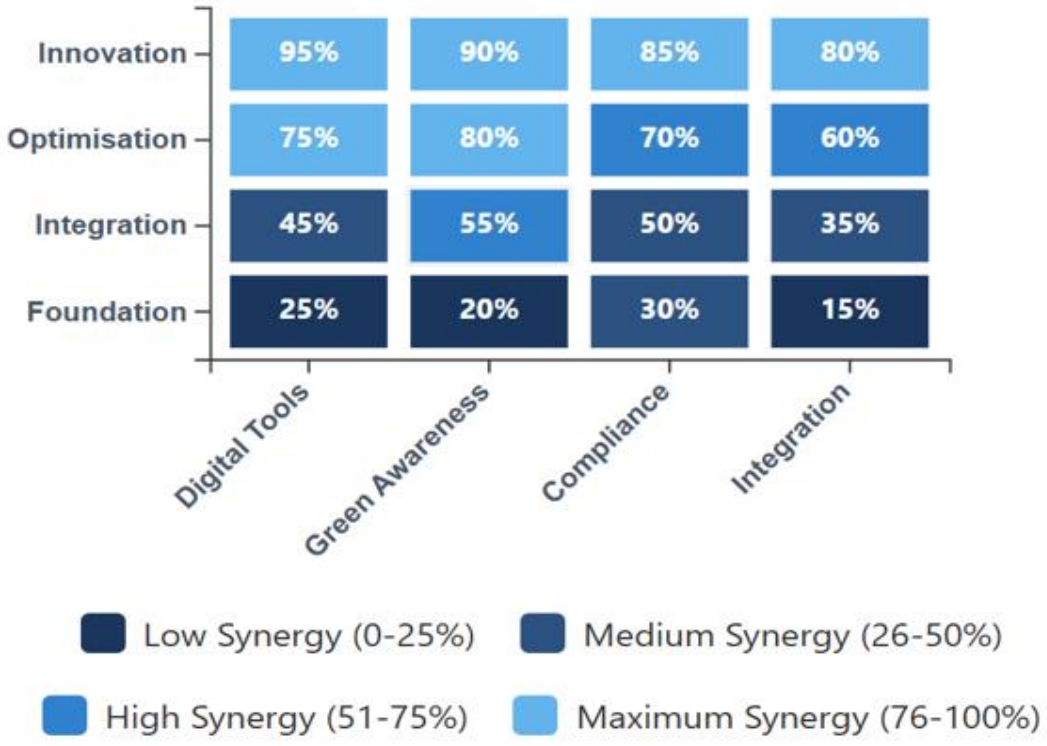


**Figure 2.** Digital HR vs Green Talent Maturity Heatmap

Figure 2 displays the Digital HR vs Green Talent Maturity Heatmap, providing a visual representation of the relationship between digital HR capabilities and green talent development across different organizational maturity levels.

In many emerging markets, there are environmental constraints for the limited supply of skilled technical workforce, thus creating the implementation challenges. For the organisations, the search for a person with the right skills to design, implement, and maintain integrated digital HR and sustainability systems shall be difficult. This mismatch of demand and supply can delay implementation, pull up the costs to more being invested in training or external expertise, who will be hired at an exorbitant price.

### 4.4 Regulatory and Governance Factors

Environmental protection, along with data protection, may have fewer or less stringent regulations in the emerging economies and hence pose uncertainties for any organization willing to implement a comprehensive sustainability Programmed. The absence of clarifying regulatory guidance presents difficulties to any organisations in setting standards and compliance requirements.

Data privacy and security regulations may not always be uniformly applied in emerging markets. This acts as a hindrance to implementing digital HR systems that collect and process sensitive employee information. Organisations must ensure that varying regulatory requirements in different jurisdictions are met while providing adequate protection for employee data. There could also be differences in environmental regulations across emerging markets. This adds another layer of complexity for multinational organisations that operate in more than one jurisdiction. The absence of harmonized requirements for environmental reporting can result in difficulties to agree on both measurement and management approaches for application across locations.

## 5. Cultural and Social Considerations

These cultural considerations also influence the effectiveness of digital approaches concerning HR for green talent development in ways that ask for such prior consideration. Collectivistic cultures found in many emerging economies may support group learning and sustainability efforts, as employees would perhaps be willing to collaborate for the benefit of the community-at-large. Looking at the sustainability programs and green talent development initiatives from this point of view means that enrichments could be offered to them. On the other hand, hierarchical set-ups common to the many poverty-market establishments do endanger appropriate change management approaches during the introduction of any new digital environment or green practice. Traditional authority structures may oppose anything that undermines the present ways of working, especially if it poses a threat to the existing power relationships.

Communication patterns and language barriers can combine to work against the successful implementation of change. Organizations operating in emerging markets often face the challenge of designing digital systems and training content for a multilingual workforce working at various literacy levels. Technology solutions need to factor in these linguistic and educational diversity issues if they are to be implemented effectively. Trust in technology and environmental initiatives evolve from being culture-based and thus depend upon the history and experiences of a particular culture. Organizations should internalize such cultural peculiarities and transform their implementation accordingly so as in building trust and engagement among employees.

### 5.1 Strategic Implications for HR Leaders

HR directors, with digitally enhanced HR capabilities and green talent development strategies, will have to fundamentally metamorphose the traditionally held concepts of the roles and competencies of those assigned to HR functions. By not merely discouraging organizational sustainability initiatives but by being passive implementers of the organization, HR directors should instead become active architects of the green transformations, having to actualize, through technology, sustainability competencies identifying, developing, and employing the organisations and its extended value chain.

### 5.2 Evolving Role Requirements

The expanded scope entails developing new competencies for HR professionals themselves that go beyond traditional HR knowledge. Digital fluency includes more than just awareness of HR technologies: it is also a question of understanding how these systems can be configured and put to work for sustainability goals. HR leaders need to know data analytics, applications of artificial intelligence, and systems integration to really develop a green talent base with the aid of digital capabilities.

In conjunction with this, they should also become strongly environmentally literate to translate the organization's sustainability objectives into talent needs and development Programmes. This involves a good understanding of basic environmental science, sustainability frameworks, and environmental challenges in their respective industries. They will need to remain abreast of changes in sustainability regulations and standards that affect talent needs The coordination capabilities become critical as a lot of green talent development necessitates network collaboration across functions and geographies within supply chain organisations. HR leaders must take on boundary spanning roles to facilitate knowledge sharing and capability development across these rather complex stakeholder ecosystems. This calls for diplomatic skills, cultural awareness, as well as the ability to foster relationships in a wide array of organizational contexts. Strategic thinking skills become increasingly important as HR leaders must become more active in organizational strategy formulation rather than being a mere implementer. This also means involvement in the sustainability strategy development process; contributing to decisions on supply chain partnerships; and influencing product and service design based on workforce capability considerations.

### 5.3 Leadership Development Imperatives

The complexity of digital HR and sustainability initiatives broadly puts HR leaders into developing new leadership competencies that equip them to steer organizational transformation. Change management skills then become significant, as initiatives often demand large-scale culture changes, alterations in existing processes, and new systems.

HR leaders must develop their innovation capacities so that they can determine and test new methods for green talent development—technologies that keep on changing with hours, understanding best practices from other industries and markets, and cultivating organizational values around experimentation and learning. 1.6Risks come into play since digital HR/sustainability initiatives traditionally involve relatively new tech and approaches of unclear outcome. HR leaders must therefore be able to evaluate and manage risk in conjunction with innovations designed to build organizational capability.

Communication needs to be reshaped to help HR leaders develop targeted communication strategies among different stakeholder groups, including technology vendors, sustainability experts, government bodies, and partners in supply chain. HR leaders need to possess capabilities to explain technical concepts in business language within their own organisations and then to translate the value of their HR initiatives to organisations outside of HR.

## 6. Implementation Roadmap and Best Practices

Successful implementation of green talent digital HR strategies calls for systematic planning and phased execution, keeping in view the complicated nature of integration among technological and sustainability initiatives. The process of implementation is to be managed in such a way that an organization gets its intended outcomes at the time of observed risk and resource constraints.

### 6.1 Assessment and Planning Phase

Begin with a comprehensive assessment of the current digital HR maturity and the level of green competencies within their own workforce. From this baseline perspective, targets and concrete priority development areas can be set. The assessment must investigate the organization's technological capabilities, workforce skill level, organisations culture, and external factors that might govern the successful implementation.

In carrying out the assessment exercise, one should involve all relevant stakeholder groups such as HR professionals, IT experts, sustainability experts, and line managers. This ensures that all issues related factors are brought to the fore and that implementation plans are carried out considering divergent organizational needs and constraints. Upon completion of an assessment, an organization should produce integrated roadmaps to map digital HR investments with green talent development targets. These roadmaps should state specific technology requirements, skill development Programmes, performance measurement systems, and governance structures required to support the transformation. They should also include timelines, resource requirements, and strategies to mitigate risks.

### 6.2 Change Management and Capability Building

Change management becomes critical during implementation, especially in emerging economy conditions where the workforce's digital literacy and environmental awareness could be vastly different. Thus, an organisations should completely devote itself to communication and training Programmes that are aimed at building both technological and environmental competencies.

The change management approach should additionally target resistance to new technologies and ways of working by clearly stating the value proposition and offering adequate support for skill-building. Continuous communications on progress and success stories keep the momentum alive and keep the stakeholders engaged during the process of bringing about change.

Skill development should be aimed at technically equipping people for the use of new systems while also developing their environmental knowledge for the development of green talents. Training Programmes must cater to different learning styles and levels of skills so that all employees are equally capable of going through the transformation together.

### 6.3 Partnership and Collaboration Strategies

Such partnership strategies are critical, especially for SMEs that may not have the internal capacities required for a full-scale digital HR implementation. Collaborating with technology providers, academic institutions, and industry associations will avail resources and expertise while spreading the costs among multiple stakeholders.

Strategic partnerships may also allow the exchange of knowledge and development of practices between organisations facing similar problems. An industry association or government agency can also coordinate these joint efforts for shared resource development. Technology partnerships should be carefully crafted to ensure solutions meet specialized organizational needs while remaining scalable for future growth. Organisations should avoid vendor lock-in situations where flexibility is compromised and long-term costs are increased.

Monitoring and Continuous Improvement

Continuous monitoring and adaptation ensure that implementation efforts are aligned with business requirements and technology capabilities as they change. Assessing the progress against the DHGTI framework stages regularly will give way to accepting adjustments needed and celebrating the milestones along the way.

The performance measurement systems will have to measure technological advancement along with green talent development results so that the organisations may interpret the relationship between these and act accordingly. Key

performance indicators should include system utilization rates, progress in skill development, upgrades in environmental performance, and measurements that represent the business impact. Feedback systems should gain input from employees, managers, and other stakeholders on improvement areas and the implementation itself for necessary modification. Through iterative review cycles, an organization may apply lessons learned and adapt to the changing environment.

## 7. Future Research Directions and Emerging Opportunities

The intersection of digital HR and green talent development is a future-filled arena of research, with many unexplored dimensions from which much can be derived in theoretical as well as applied knowledge. The complexity of this intersection creates multiple research opportunities that can aid academics in generating knowledge as well as help practitioners in formulating guidance.

### 7.1 Longitudinal and Comparative Studies

Longitudinal studies that track organizational progress through different stages of the DHGTI framework could yield many useful insights into the challenges for implementation and the factors for success, which could lead to recommendations regarding best practice. Another set of questions is to identify critical turning points of difficult transition phases and develop more nuanced understanding about the contextual factors that assist in the advancement from one stage to the other. Such studies should cover organisations from different industries, sizes, and geographical contexts so that the varying factors influencing going through maturity stages are captured. Greater attention should be directed towards understanding why some organisations move very rapidly while others are stuck in a particular stage for several years despite similar availability of resources as well as external environmental factors.

Cross-cultural research into how different emerging economy contexts impact the integration of digital HR and green talent would make the framework more widely applicable across markets from the middle of the spectrum. For instance, cultural dimensions such as power distance, uncertainty avoidance, and environmental orientation may have a strong pull in shaping approaches to implementation and outcomes in ways still largely unexplored. Comparative research between emerging and developed markets could surface some unique opportunities and challenges that organisations in different economic contexts face. Such research could identify potential avenues for organisations in emerging markets to leapfrog traditional development paths and achieve competitive advantages via innovative approaches.

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### 7.3 Network and Ecosystem Research

Research on a supply chain network that investigates how digital HR capability can support green talent development across multi-tier supplier relationships could go a long way toward solving a critical practical challenge. Most sustainability issues hit far into the extended supply chain and would require a coordinated capacity-building effort across several organisations differing in technological sophistication and resource availability. Therefore, this research would investigate how lead organisations can use their digital HR capabilities to support green talent development amongst supply chain partners, especially SMEs that might not have such capability in-house. Effective approaches to ecosystem-wide capability development could greatly multiply the success of sustainability initiatives.

Research would also benefit from focusing on the role of intermediary organisations to include industry associations, government agencies, and non-profit organisations to define means by which digital HR and green talent development could be facilitated across supply chain networks. These intermediaries may play vital roles in coordinating collaborative efforts and providing resources for shared capability development.

## 8. Conclusion

The opportunities that digital HR technology opens for green talent development capability are particularly significant for an emerging economy setting where organisations simultaneously strive for technological advancement and sustainability goals. The coming together of these traditionally separate domains consequently allows organisations to carve a competitive advantage vis-à-vis a concurrent contribution to environmental goals benefiting wider society.

The DHGTI framework structures the view on this integration, mapping the road for practitioners in using technology to create environmental competences within organisations and supply chains. From Foundation through Innovation, the four-staged framework provides organisations with a set of milestones and development targets while acknowledging the process's complexities. Among significant factors are infrastructural constraints and resource limitations, together with various cultural issues influencing adoption and effectiveness, and these must find expression in the mind set and actions of all involved in the implementation process who must also consider these extenuating factors. Implementation is not a walk in the park, particularly if they are in emerging economies.

HR managers must enthusiastically embrace the role of green transformation by developing competences in digital technology and environmental management and facilitating collaboration within complex stakeholder networks. For this expansion to be successful, professional development and organisational support must extend to ensure HR managers effectively lead their organisations through the process. Of necessity, these systems require a thorough staged implementation underpinned by careful continual re-appraisal of how circumstances evolve to retain value on a longer-term basis. Concomitantly, an organization will also need to invest in its change management along with capability and partnership building, keeping its focus on outcomes and rolling out risk management.

The amalgamation of digital HR and green talent is more than just a mechanism for operational efficiency; indeed, it is about rethinking how an organisations develops and deploys human capabilities in time toward solving the most glaring environmental challenges. Unto emerging economies are in the process of development; how this integration will be undertaken shall become either their competitive advantage or what will contribute to their poor image in terms of sustainability initiatives. Great prospects lie ahead for future research in this emerging area, which promises to cast light on both theoretical and practical aspects. Longitudinal studies, cross-culture research, technology innovation inquiries, and ecosystem analyses all pave the way for aiding in greater knowledge and better practice in this timely matter.

The speed with which digital technologies are progressing and the urgent environmental concerns presently at an all-time high make the case for organisations to consider working in an integrated fashion, addressing digital HR and green talent development. Organisations that manage this successfully will carve a niche in the marketplace while collectively advancing sustainable development that is rewarding to all stakeholders.

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