



Human capital, longevity and emerging career models: Implications for human resource innovation

Teresa Dieguez¹

Paula Loureiro²

¹Research on Economics, Management and Information Technologies, Portucalense University, Porto, Portugal.

¹Email: 52542@alunos.upi.pt

²Polytechnic University of Cávado and Ave, Barcelos, Portugal.

²Email: ploureiro@ipca.pt



(✉ Corresponding Author)

Abstract

Population longevity and rapid digital transformation are changing labor markets and career paths. Novel careers like portfolio careers, hybrid work, sustainable careers, and senior entrepreneurship are driving different approaches to human capital development and human resource management. The relationship between longevity, HR transformation, and new employment models within the longevity economy is examined in this study. This research draws on relevant literature from labor economics, human resource management, sustainable careers, and organizational innovation, and constructs an integrated framework around demographic ageing, employability, career sustainability, and organizational adaptation. The research demonstrates that longer life expectancy will compel career paths that are more flexible, multistage, and adaptive based on the recently published empirical evidence on workforce ageing and the silver economy, supporting an interdisciplinary conceptual approach. At the same time, organizations are challenged to modernize talent management, lifelong learning, and age-inclusive HR practices. Individual ambidexterity, continuous skills development, and senior entrepreneurship are highlighted in the paper as mediators of career sustainability in extended working lives. It contends that, rather than considering this growth as solely a demographic burden of increasing longevity, the longevity economy should be seen as a chance for a greater role of innovation, productivity, and social inclusion. The study adds to the growing literature relevant to the topic of longevity and labor market transformation by connecting macroeconomics with organizational and individual perspectives, and includes a consolidated model useful for researchers, policy-makers, and HR professionals.

Keywords: Career models, Human capital, Human resource innovation, Longevity economy, Senior entrepreneurship.

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Contribution of this paper to the literature

By weaving together human capital theory, sustainable careers and human resource innovation with the framework of the longevity economy, the study complements the literature on longevity and labor market change. The article advances understanding of how demographic ageing reshapes career models, organisational adaptation, and employability across extended working lives.

1. Introduction

Population ageing and increasing life expectancy are fundamentally reshaping contemporary economies, labor markets, and organizations. Over the last century, global life expectancy has increased substantially, generating significant transformations in employment patterns, retirement systems, human capital investment, and career trajectories. Global life expectancy now exceeds 70 years, compared to approximately 30 years in the late nineteenth century (Jamison et al., 2024), profoundly altering how individuals structure education, work, retirement, and long-term life planning. Sustained fertility decline combined with rising longevity has accelerated one of the most significant demographic transitions in modern history (OECD, 2024; United Nations, 2024).

Traditionally, the demographic transition associated with increasing longevity has been viewed as a challenge for welfare systems, pension sustainability, and healthcare provision (Bloom et al., 2015; Lee, 2016). However, recent scholarship increasingly reframes longevity as a source of economic and social opportunity rather than solely a demographic burden (Ribeiro & Araújo, 2025). The concept of the “longevity dividend” highlights the productive, innovative, and social contributions of older populations when supported by appropriate institutional, educational, and organizational systems (Brink, 2023). From this perspective, ageing societies evolve into “longevity societies,” where extended working lives and multistage careers become central dimensions of economic development (Lee et al., 2025). These demographic and social transformations are occurring simultaneously with rapid digitalization, technological disruption, automation, and organizational restructuring (World Economic Forum, 2020).

As a result, traditional linear career trajectories characterized by stable employment, predictable retirement transitions, and hierarchical organizational progression are progressively losing relevance. Emerging career models increasingly emphasize adaptability, employability, portfolio careers, entrepreneurship, hybrid work arrangements, lifelong learning, and continuous reskilling (Arthur & Rousseau, 1996; Hall, 2004). Career sustainability has become particularly important in the context of longer working lives and rapidly changing labor markets (Van Der Heijden et al., 2020).

Within this context, human capital acquires renewed strategic importance. Individuals and organizations must continuously adapt skills, knowledge, and professional identities to evolving labor market demands. Sustainable employability increasingly depends on lifelong learning, adaptability, innovation capabilities, and career reinvention (Becker, 1964; Kooij, Zacher, Wang, & Heckhausen, 2020). Simultaneously, organizations face increasing pressure to redesign human resource management practices capable of supporting age-diverse workforces and extended careers.

Recent research on sustainable careers and ageing societies suggests that adaptability and continuous learning are central determinants of career sustainability in later professional stages (Scheibe & Kooij, 2024). Individual ambidexterity, understood as the ability to balance exploration of new opportunities with exploitation of accumulated expertise, has emerged as an important adaptive mechanism supporting employability and professional resilience in ageing labor markets (Dieguez, 2026; March, 1991).

The growing relevance of the silver economy further reinforces the strategic importance of longevity-related transformations. The silver economy encompasses economic activities associated with ageing populations, including healthcare, technology, financial services, entrepreneurship, housing, and labor participation (Klimczuk, 2016). Beyond consumer markets, the silver economy also involves organizational innovation, workforce transformation, and age-inclusive business models (Egeland, Heinonen, & Stensaker, 2026). Senior entrepreneurship, in particular, is increasingly recognized as an important mechanism for economic participation, innovation, and career reinvention among older adults (Kautonen, 2008; Maritz, Perenyi, De Waal, & Buck, 2020).

Despite the growing prominence of longevity-related transformations, important gaps remain in the literature regarding the integration of human capital, sustainable careers, human resource innovation, and emerging career models within the broader context of the longevity economy. Existing studies frequently examine these dimensions separately, limiting the development of integrated frameworks capable of explaining how demographic ageing simultaneously affects individuals, organizations, and labor market systems. This study seeks to address this gap by developing an integrative conceptual framework connecting longevity, human capital transformation, sustainable careers, and emerging career models. More precisely, the article seeks to:

1. Examine the changing nature of the interplay between longevity and demographic ageing in career models and labor market participation.
2. Explore the implications of extended working lives for human capital development and career sustainability.
3. Study the impact of individual ambidexterity, lifelong learning, and senior entrepreneurship in evolving career paths.
4. A look at how workforce ageing impacts human resource innovation and organizational adaptation.

This paper adds to the literature by merging macroeconomic lenses on longevity with the dimensions of organisational sustainability, work related to career longevity in relation to organization and individual factors (longevity), and the structure and structure of the workforce. In addition, the paper contributes valuable lessons for policy makers, organizations and HR practitioners, working to create sustainable solutions for ageing and increasingly dynamic labor markets.

2. Literature Review

2.1. Longevity Economy and Demographic Transformation

The global increase in life expectancy represents one of the most significant demographic transformations of the modern era. According to Gianfredi et al. (2025), life expectancy has increased by approximately two to three years per decade over the last century, generating profound implications for economic systems, institutions, and labor

markets. These demographic dynamics are reshaping traditional understandings of ageing societies through the emergence of the “longevity society,” which emphasizes adaptation to longer life spans rather than focusing exclusively on age structure (Faria, 2025). Sustained gains in longevity are transforming not only population structures but also economic behavior, workforce participation, and social institutions (Bloom et al., 2015).

The economics of longevity highlights two interconnected dimensions. First, increasing life expectancy extends the amount of time individuals can expect to live and participate in the labor market. Second, longer lives reshape behavioral patterns, institutional arrangements, and economic decision-making across the life course (Kužmar, 2026; Schoon & Evans, 2023). Consequently, traditional assumptions regarding education, retirement, productivity, and sequential career stages are becoming progressively less adequate for contemporary societies (Koosha, Hezarjaribi, Allameh, Panahi, & Lalegani, 2025).

The concept of the “longevity dividend” further suggests that population ageing may generate positive economic outcomes when societies effectively mobilize the productive capacity, experience, and innovative potential of older populations (Stambler, 2025). Rather than interpreting ageing exclusively as a fiscal burden, recent scholarship increasingly emphasizes the economic opportunities associated with extended labor market participation, entrepreneurship, innovation, and consumption (OECD, 2024; Pyrooz, Lerverso, Sanchez, & Densley, 2024).

Simultaneously, the silver economy has emerged as an important domain of economic and organizational transformation. The silver economy encompasses economic activities associated with ageing populations, including healthcare, financial services, digital technologies, mobility, housing, and age-inclusive employment systems (Klimczuk, 2016). Importantly, the silver economy extends beyond consumption-related activities and includes organizational adaptation, labor participation, and innovation ecosystems (Egeland et al., 2026). Senior entrepreneurship and longer workforce participation are increasingly recognized as strategic dimensions of economic sustainability and inclusive growth (Kautonen, 2008).

Recent studies suggest that organizations remain insufficiently prepared for demographic transition despite the growing economic relevance of older populations (OECD, 2021). Structural labor shortages, declining fertility rates, and increasing longevity are compelling organizations to rethink workforce management, career structures, and talent development strategies. Consequently, demographic ageing is progressively transforming strategic human resource management into a central dimension of organizational sustainability and long-term competitiveness (World Economic Forum, 2020).

2.2. Human Capital Transformation in Extended Working Lives

Human capital theory traditionally conceptualizes education, knowledge, and skills as central determinants of productivity and economic growth (Becker, 1964; Schultz, 1961). However, the longevity transition increasingly challenges conventional assumptions regarding the accumulation and utilization of human capital across the life course. In traditional career models, education was primarily concentrated in early adulthood, followed by relatively stable employment trajectories and retirement in later stages. Increasing longevity disrupts this sequence by extending working lives and requiring continuous adaptation to technological, organizational, and economic transformations (Chen, 2023; Lee et al., 2025).

Consequently, lifelong learning and employability have become critical dimensions of contemporary human capital development. Sustainable employability no longer depends exclusively on formal qualifications but increasingly involves adaptability, digital competencies, learning orientation, and continuous professional reinvention (Kooij et al., 2020). The acceleration of digital transformation further intensifies these dynamics. Automation, artificial intelligence, platform economies, and hybrid work arrangements continuously reshape labor market demands, generating both opportunities and challenges for older workers (World Economic Forum, 2020). Although senior professionals often possess valuable tacit knowledge, leadership capabilities, and social capital, they may simultaneously encounter barriers associated with technological adaptation and age-related discrimination in labor markets (OECD, 2021).

Within this context, organizations must increasingly invest in age-inclusive human capital strategies capable of supporting adaptation throughout extended careers. Such strategies include reskilling initiatives, intergenerational knowledge transfer, flexible work arrangements, mentoring systems, and continuous career development programs (Egeland et al., 2026). The growing importance of human capital transformation also reinforces the strategic relevance of organizational innovation. Human resource management is progressively evolving from an administrative workforce coordination function toward a strategic capability-development approach focused on adaptability, resilience, and sustainable careers (Van Der Heijden et al., 2020).

2.3. Emerging Career Models and Career Sustainability

The reconfiguration of labour markets has led to the realization of different career profiles, which are flexible, discontinuous, and multistage. Classic linear careers rooted in long-lasting organizational advancement are being superseded by more personalized and flexible trajectories across the career spectrum. Boundaryless careers, protean careers, portfolio careers, and hybrid work types constitute key examples of this emerging model. Such jobs stress flexibility, self-agency, versatility, job-market potential and continuous education over long-term loyalty to your workplace. The sustainable careers perspective is a critical frame for understanding professional trajectories in dynamic labor markets. The ability to remain employable, well, and to contribute meaningfully over time - and change the latter as organizational and environmental changes occur. Career sustainability has become particularly important for the ageing worker. Lifelong work forces us to adapt our lifestyle and work practices, as well as organizational expectations, based on the age of work. And, of course, the ability to work longer hours means that over time, it becomes increasingly necessary for older workers to modify to be in tune with the changing technologies, work patterns and expectations as well as business requirements. At the same time, older employees demand flexibility, autonomy, job enrichment, real personal motivation, meaningful participation, and integration of work and life. Recent scholarship argues that sustainable careers derive from interplays between individual resources, organizational conditions, and broader institutional contexts (Donald, Van Der Heijden, & Manville, 2024). Sustainable employability, therefore, needs to be managed at different levels - education systems, labor policies, organizational practices, and individual career management.

2.4. Individual Ambidexterity and Career Adaptability

Ambidexterity has emerged as an important concept for understanding adaptive behavior in dynamic labor markets (March, 1991). Ambidexterity refers to the ability to balance exploration and exploitation activities simultaneously or sequentially. Exploration involves experimentation, learning, innovation, and the pursuit of new opportunities, whereas exploitation emphasizes efficiency, refinement, and the effective use of existing expertise and knowledge. Within extended career trajectories, ambidexterity enables professionals to preserve accumulated experience while simultaneously adapting to changing labor market demands and organizational transformations (Dieguez, 2026; Joseph, Firmin, Oseni, & Stranieri, 2023).

A growing body of research suggests that ambidextrous capabilities contribute positively to career sustainability, employability, and resilience under conditions of uncertainty and technological disruption (Dieguez, 2026; Van Der Heijden et al., 2020). Older professionals frequently possess strong exploitative capabilities associated with experience, tacit knowledge, professional networks, and accumulated expertise. However, maintaining sustainable careers in longevity-oriented labor markets increasingly requires exploratory capabilities involving lifelong learning, digital adaptation, openness to innovation, and continuous professional reinvention (Koosha et al., 2025).

Significantly, ambidextrous behavior is influenced by both individual and organizational factors. Leadership practices, innovation-oriented organizational climates, job design, mentoring systems, and knowledge-sharing mechanisms may significantly support or constrain adaptive capabilities throughout extended working lives (Egeland et al., 2026). Consequently, organizations play a critical role in creating environments that encourage continuous learning, adaptability, and intergenerational collaboration.

The integration of ambidexterity and sustainable career perspectives provides valuable insights into how ageing professionals navigate evolving labor market transformations. In this context, ambidexterity may function as a critical micro-level capability supporting sustainable employability and continued participation in longevity-centered labor markets (Dieguez, 2026).

2.5. Senior Entrepreneurship and Career Reinvention

Entrepreneurship has increasingly emerged as an important dimension of new career models among older populations. Senior entrepreneurship refers to entrepreneurial activities initiated during later career stages or post-retirement periods (Kautonen, 2008). Several factors contribute to the growth of senior entrepreneurship, including increasing longevity, labor market restructuring, financial pressures, technological accessibility, and changing social perceptions regarding ageing (Maritz et al., 2020). Unlike traditional retirement-centered models, many older professionals increasingly engage in entrepreneurial activities as mechanisms for autonomy, income generation, social participation, and personal fulfillment.

Research suggests that senior entrepreneurs possess important advantages derived from accumulated professional trajectories, including managerial expertise, industry knowledge, social capital, professional networks, and financial resources (Kautonen, Kibler, & Minniti, 2017). These assets may positively influence opportunity recognition, strategic decision-making, innovation capacity, and business survival. Furthermore, entrepreneurship may contribute to sustainable employability by enabling flexible labor participation, career reinvention, and continued economic engagement throughout extended working lives (Villalobos, 2020).

Senior entrepreneurship also represents a significant dimension of the silver economy, particularly through experience-based innovation and the development of products and services associated with longevity-related market opportunities (Klimczuk, 2016). In this context, older entrepreneurs increasingly contribute not only to economic activity but also to social innovation and inclusive growth within ageing societies.

However, important barriers continue to affect senior entrepreneurship, including age discrimination, financing constraints, technological adaptation challenges, and institutional limitations (OECD, 2021). Consequently, policymakers and organizations increasingly recognize the importance of entrepreneurship ecosystems, lifelong learning initiatives, mentoring networks, and age-inclusive innovation policies capable of supporting entrepreneurial activity among older populations (World Economic Forum, 2020).

2.6. Human Resource Innovation in Ageing Workforces

Demographic ageing and ongoing labor market transformation are increasingly compelling organizations to redesign their human resource management (HRM) strategies and workforce practices. Traditional HR models developed for younger and relatively stable workforces are becoming progressively insufficient for managing multigenerational and longevity-oriented labor systems (Kulik, Ryan, Harper, & George, 2014). In this context, human resource innovation involves the development of adaptive practices that support sustainable employability, workforce diversity, continuous learning, and organizational resilience.

Age-inclusive HR strategies increasingly incorporate flexible retirement arrangements, phased retirement, intergenerational collaboration, reskilling initiatives, remote work opportunities, and wellbeing-oriented management systems (OECD, 2021). Recent literature emphasizes the importance of creating organizational environments that are capable of valuing older professionals while simultaneously supporting continuous adaptation and lifelong learning (Kooij et al., 2020; Scheibe & Kooij, 2024). This transformation requires a shift from deficit-oriented perspectives of ageing toward capability-based approaches that recognize experience, resilience, mentoring capacity, and knowledge transfer as strategic organizational assets.

Furthermore, organizations are increasingly recognizing that ageing workforces may positively contribute to innovation, organizational learning, and strategic adaptability when supported by inclusive leadership and developmental HR practices (Egeland et al., 2026). Intergenerational collaboration and age-diverse teams may strengthen organizational knowledge retention, creativity, and problem-solving capabilities in dynamic labor markets.

Consequently, human resource innovation becomes a central dimension of organizational sustainability within longevity economies. Organizations capable of effectively integrating age diversity, sustainable careers, and continuous capability development may achieve important advantages in terms of talent retention, workforce resilience, organizational adaptability, and long-term competitiveness (World Economic Forum, 2020).

3. Conceptual Framework

This study proposes an integrative conceptual framework linking longevity, human capital transformation, emerging career models, and human resource innovation. At the macro level, demographic ageing, increasing life expectancy, digital transformation, and labor market restructuring generate structural pressures that require adaptation from individuals, organizations, and institutions (Bloom et al., 2015). These transformations are reshaping economic systems, workforce participation, and organizational structures within the broader context of the longevity economy.

At the organizational level, firms are increasingly adopting innovative HR practices focused on sustainable employability, lifelong learning, workforce flexibility, and age-inclusive talent management (OECD, 2021). Such practices include reskilling initiatives, intergenerational collaboration, flexible work arrangements, and continuous capability development aimed at supporting longer and more dynamic careers (Egeland et al., 2026).

At the individual level, professionals are increasingly required to develop adaptive capabilities such as ambidexterity, continuous learning orientation, entrepreneurial behavior, and career reinvention strategies to maintain employability and career sustainability in changing labor markets (Dieguez, 2026; Van Der Heijden et al., 2020). These adaptive capacities become particularly important in longevity-oriented societies characterized by extended working lives and technological disruption.

The framework suggests that sustainable participation in longevity-centered labor markets depends on dynamic interactions between demographic and economic transformations, organizational adaptation, human capital development, and individual adaptability. In addition, the framework emphasizes that the longevity economy generates both challenges and opportunities for organizations and societies. While increasing longevity places pressure on pension systems, healthcare provision, and workforce management, it simultaneously creates opportunities for innovation, entrepreneurship, knowledge retention, productivity enhancement, and sustainable economic participation (Lee et al., 2025).

Figure 1 synthesizes the integrative conceptual framework proposed in this study. The framework illustrates how demographic and economic transformations associated with increasing longevity, digitalization, and labor market restructuring operate as macro-level drivers of change. These structural transformations stimulate organizational responses through human resource innovation, particularly in areas related to sustainable employability, lifelong learning, workforce flexibility, and age-inclusive talent management.

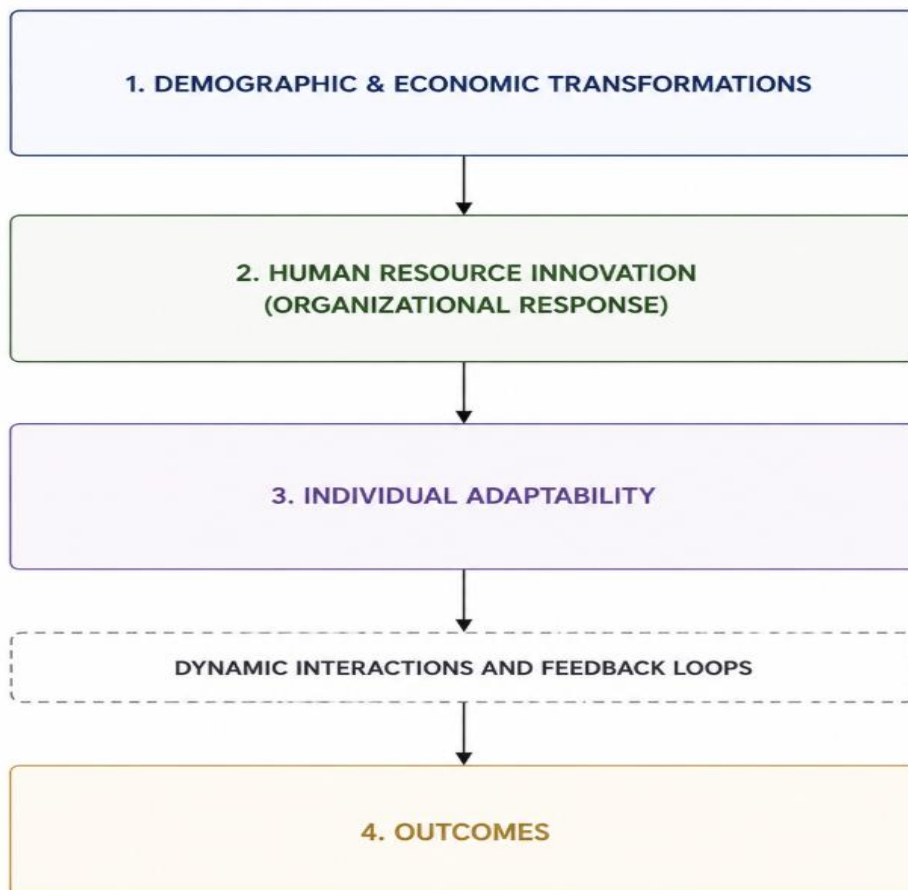


Figure 1. Integrative conceptual/Framework for the longevity economy.

Source: Dieguez (2026); Lee et al. (2025); OECD (2021); Gianfredi et al. (2025) and Pyrooz et al. (2024).

At the individual level, the framework highlights the growing importance of adaptability, continuous learning, entrepreneurial orientation, and career reinvention as mechanisms supporting employability and career sustainability in extended working lives. The model further emphasizes the existence of dynamic interactions and feedback loops between macroeconomic transformations, organizational adaptation, and individual capabilities.

Finally, the framework proposes that the alignment between these dimensions contributes to important outcomes for individuals, organizations, and societies, including sustainable employability, organizational resilience, innovation and productivity, long-term competitiveness, and inclusive and sustainable economic growth within the broader context of the longevity economy.

4. Discussion

The literature suggests that longevity is fundamentally reshaping assumptions regarding work, retirement, and labor market participation in later life (Dal Maso, 2026; Lee et al., 2025). Rather than representing isolated

demographic shifts, increasing longevity transforms institutional structures, organizational systems, and professional identities within contemporary societies. One of the most significant implications concerns the transition from traditional linear and retirement-oriented career pathways toward more flexible, multistage career trajectories (Villalobos, 2020). Emerging career models increasingly incorporate combinations of employment, entrepreneurship, lifelong learning, caregiving responsibilities, and flexible work arrangements across extended life courses (Arthur & Rousseau, 1996; Hall, 2004).

These transformations require substantial changes in human capital development systems. Lifelong learning is becoming essential not only for younger workers but across all career stages, particularly in technologically dynamic labor markets characterized by continuous change (OECD, 2021). Sustainable employability increasingly depends on continuous reskilling, digital literacy, adaptability, and career reinvention (Kooij et al., 2020).

An important dimension highlighted in the literature concerns the strategic relevance of individual ambidexterity. Professionals capable of simultaneously leveraging accumulated expertise while exploring new opportunities tend to demonstrate higher levels of resilience and career sustainability in uncertain labor market environments (Dieguez, 2026; March, 1991). Consequently, ambidexterity becomes increasingly important for ageing workforces facing technological and organizational disruption.

The literature further suggests that organizations must progressively abandon deficit-oriented perspectives on ageing. Older workers should not be perceived exclusively through declining productivity narratives but also through their contributions in terms of experience, mentoring capacity, organizational memory, social capital, resilience, and leadership capabilities (Egeland et al., 2026; OECD, 2021). In this context, human resource innovation becomes a critical dimension of organizational sustainability within longevity economies. Flexible work systems, age-inclusive leadership, phased retirement, intergenerational collaboration, and wellbeing-oriented HR practices emerge as important organizational responses to demographic transformation (Scheibe & Kooij, 2024).

The growing relevance of senior entrepreneurship also deserves particular attention. Entrepreneurship increasingly functions as a mechanism for career reinvention, autonomy, and continued economic participation among older professionals (Kautonen, 2008; Maritz et al., 2020). In this sense, entrepreneurship extends beyond business creation and becomes part of broader transformations in professional identity and career sustainability within ageing societies.

From a policy perspective, the findings reinforce the importance of integrated approaches connecting labor market regulation, lifelong learning systems, healthcare policies, digital inclusion, and age-inclusive innovation ecosystems (World Economic Forum, 2020). Public institutions and organizations must increasingly collaborate to support sustainable participation across longer and more diverse career trajectories.

Finally, this study contributes to the literature by integrating dimensions that are frequently examined separately, including longevity economics, sustainable careers, ambidexterity, senior entrepreneurship, and human resource innovation. This integrative perspective provides a more comprehensive understanding of how demographic ageing simultaneously affects macroeconomic systems, organizations, and individual professional trajectories.

5. Conclusion

The increasing longevity of populations represents one of the most significant economic and social transformations of the contemporary era. This article examined how demographic ageing and extended working lives are reshaping human capital development, emerging career models, and organizational adaptation.

The study demonstrates that traditional career structures are progressively being replaced by more flexible, multistage, and adaptive professional trajectories. Simultaneously, organizations face growing pressure to redesign human resource systems capable of supporting sustainable employability and age-diverse workforces.

The paper highlights the strategic importance of lifelong learning, career adaptability, ambidexterity, and senior entrepreneurship within longevity-oriented labor markets. These dimensions increasingly function as critical mechanisms supporting sustainable participation across extended careers.

Furthermore, the article argues that the longevity economy should not be interpreted exclusively as a demographic challenge but also as an opportunity for innovation, productivity, organizational transformation, and social inclusion. The silver economy, sustainable careers, and age-inclusive HR systems represent important strategic dimensions for future economic development.

The study contributes to the literature by integrating macroeconomic, organizational, and individual perspectives into a unified conceptual framework connecting longevity, human capital, and emerging career models.

From a managerial perspective, organizations should invest in age-inclusive talent management, continuous capability development, flexible career systems, and intergenerational collaboration. From a policy perspective, governments should support lifelong learning, digital inclusion, entrepreneurship ecosystems, and sustainable labor participation throughout extended working lives.

The study presents some limitations. As a conceptual paper, the analysis does not include primary empirical data. Future research should develop quantitative and comparative empirical studies examining the relationship between longevity, human capital development, career sustainability, and organizational innovation across different institutional contexts.

Future studies may also explore the role of artificial intelligence, platform economies, hybrid work systems, and intergenerational leadership in shaping emerging career models within longevity societies.

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