International Journal of Future Engineering Innovations

The New Workforce: Retention Strategies for Gen Z Engineers in a Digital Era

Teresa Dieguez [1*], Paula Loureiro [2]
[1, 2] Professors, Polytechnic Institute of Cávado and Ave, Portugal

* Corresponding Author: **Teresa Dieguez**

Article Info
ISSN (online): 3049-1215
Volume: 02
Issue: 02
March-April 2025
Received: 25-02-2025
Accepted: 22-03-2025
Page No: 83-86

Abstract
In the context of rapid digital transformation, the engineering sector faces increasing challenges in retaining skilled professionals, especially among younger generations. This study examines the retention of Generation Z employees within Portugal's technology and engineering sectors, offering insight into what motivates these professionals to remain with their organizations. Drawing on qualitative interviews, the research reveals that while competitive compensation is essential, long-term retention hinges on a broader combination of factors, including flexible work models, meaningful career progression, and a culture of well-being and inclusion. These findings highlight a generational shift in work values, where purpose, autonomy, and personal development are as important as financial incentives. The study contributes to the evolving field of human resources in engineering by emphasizing the need for integrated, future-oriented talent strategies tailored to the expectations of Generation Z. Organizations that adapt to these new dynamics are more likely to foster commitment, reduce turnover, and enhance innovation capacity.

DOI: https://doi.org/10.54660/IJFEI.2025.2.2.83-86

Keywords: Talent Retention, Generation Z, Human Resource Strategy, Engineering Innovation, Digital Workplaces, Organizational Culture.

1. Introduction

In an increasingly digital and innovation-driven economy, human capital has become one of the most critical assets for engineering organizations. The ability to attract and retain skilled professionals is no longer just an operational concern—it is a strategic imperative closely tied to competitiveness, innovation capacity, and long-term sustainability [1, 2]. Within this context, the emergence of Generation Z presents both unique challenges and opportunities for human resource management in engineering and technology sectors. Born after 1995, Generation Z represents the first fully digital-native workforce. This cohort is characterized by high technological fluency, a preference for flexible work arrangements, and a strong desire for purposeful, values-driven employment [3, 4]. However, they also tend to exhibit lower organizational loyalty, frequently seeking new challenges and experiences that align more closely with their personal and professional aspirations [5]. For organizations operating in high-skill, innovation-dependent sectors like IT and engineering, these trends demand a shift in traditional retention strategies [6]. While competitive compensation remains an essential factor in employee satisfaction, research suggests that a combination of monetary and non-monetary incentives, including career development, organizational culture, mental well-being, and work-life balance, is more effective in building long-term engagement [7, 8]. For Generation Z engineers, these factors can outweigh even salary when deciding whether to stay with an organization or move on to new opportunities.

This study explores how engineering and IT organizations can respond to these generational shifts through the lens of employee experience. Using qualitative data from interviews with Generation Z professionals in Portugal, the research provides insight into the retention strategies that resonate most with young talent. By foregrounding the employee perspective, the study contributes to a deeper understanding of how organizations can structure human resource practices to foster engagement, reduce turnover, and build a workforce equipped for the future.

2. Literature Review

2.1 Talent as a strategic asset

Talent is widely recognized as a critical driver of organizational performance, particularly in knowledge-intensive sectors like engineering and information technology. The concept of talent, while lacking a universally accepted definition, generally refers to individuals with high potential, strong performance, and valuable expertise [1, 9]. In engineering, where innovation and adaptability are essential, effective talent management becomes a source of competitive differentiation [2, 7, 10].

2.2 Generation Z in the workforce

Generation Z employees bring a distinct set of expectations to the workplace. They value autonomy, rapid career progression, flexibility, and alignment with organizational values, especially in areas like sustainability and inclusion [4]. They also tend to reject hierarchical structures, prefer digital communication, and are known for their willingness to change jobs frequently in search of better opportunities [3, 5]. These preferences call for a rethinking of conventional HR practices, particularly in industries where attracting and retaining skilled professionals is already a challenge [11].

2.3 Retention and job embeddedness

The theory of job embeddedness offers a useful framework for understanding employee retention [12]. It suggests that employees stay with organizations not just because of job satisfaction or pay, but due to their personal connections, perceived fit, and the cost of leaving [13, 14]. For younger employees, especially in engineering roles, embeddedness can be strengthened through flexible work arrangements, development programs, and a strong sense of community within the organization [15].

2.4 HR strategies for retention in engineering

In sectors facing high turnover, such as engineering and IT, organizations are adopting a blend of financial and non-financial incentives to attract and retain talent. Key strategies include competitive compensation, training and upskilling programs, hybrid and remote work models, and employee wellness initiatives [8, 16]. Internal recruitment, performance recognition, and long-term benefits like extended leave or stock options are also gaining traction as tools to deepen employee commitment [17, 18, 19].

2.5 Organizational culture and generational fit

Organizational culture plays a crucial role in both attracting and retaining talent. When the culture reflects the values of its workforce, namely flexibility, innovation, and respect, it fosters loyalty and engagement [20]. For Generation Z, a culture that promotes well-being, encourages feedback, and supports continuous learning is especially appealing [21, 22].

3. Methodology

This study adopted a qualitative exploratory approach to investigate the factors that influence talent retention among Generation Z professionals in engineering and technology-focused organizations. Qualitative research was chosen due to its capacity to capture the complexity and depth of individual perceptions, especially when addressing subjective topics such as professional satisfaction, organizational culture, and future career expectations [23].

Data collection took place between October and December 2024, through semi-structured interviews conducted with twenty participants born after 1995, thus corresponding to the generational definition proposed by [24]. All participants were engaged in high-skilled roles in the technology sector, either in Portugal or in international organizations. They held, at a minimum, an undergraduate degree and were actively working in roles associated with software development, information systems, or IT engineering. The sample was selected using a convenience sampling method, appropriate for exploratory designs where access to highly specific population groups is limited [23].

A key instrument in the research was the interview guide, which was designed by the lead researcher and subsequently pre-validated by two academic experts and a senior human resource professional. The validation process ensured that the interview questions were both clear and aligned with the study's objectives. The guide was structured around six thematic areas, allowing for a comprehensive understanding of the participants' experiences: (1) sociodemographic background, (2) professional experience in engineering or technology, (3) organizational benefits, (4) talent attraction and retention strategies, (5) generational perspectives on work, and (6) present and future expectations regarding career development.

Each interview was conducted individually and followed a semi-structured format, which allowed for open responses and flexibility in exploring emerging topics during the conversation. The duration of each session varied from 30 to 45 minutes. All interviews were audio-recorded with consent and later transcribed for analysis. Thematic analysis was employed to interpret the data, allowing patterns and categories to emerge inductively from participants' narratives. Thematic clustering was guided by [25] framework, with particular attention to recurring themes that aligned with or contradicted the theoretical assumptions presented in the literature review. Throughout the analysis process, special care was taken to preserve the authenticity of the participants' voices while integrating their views into the broader academic discourse on talent retention in engineering contexts.

This methodological design provided not only insight into the expectations and priorities of Generation Z professionals but also highlighted the practical implications of human resource strategies in fast-paced, innovation-driven industries.

4. Results

The analysis of interview data revealed a multifaceted and generationally distinct understanding of talent retention among Generation Z professionals in the technology and engineering sectors. While the sample was not intended to be representative in a statistical sense, the responses revealed consistent patterns in attitudes, values, and expectations that align with current literature on generational shifts in the workforce [3, 4].

A prominent theme among participants was a strong preference for remote and hybrid work arrangements, which were perceived as essential for maintaining a healthy work-life balance. For many, the flexibility afforded by such arrangements contributed significantly to their job satisfaction. This finding resonates with previous studies that identify flexible work models as a critical factor in retention, especially in knowledge-intensive and digital-oriented professions [20, 21]. Although remote work was widely favored, participants did not dismiss the value of

collaboration. In fact, teamwork was frequently described as an important element in achieving project goals and fostering a sense of belonging, reinforcing the dual need for autonomy and interpersonal connection in modern work environments.

Participants' perceptions of their organizations' concern for employee well-being varied considerably. Several interviewees described human resources departments as accessible and supportive, citing regular check-ins, assistance with personal matters, and respect for employees' rights as positive examples. Others, however, felt that their organizations offered only minimal or symbolic support, with limited investment in long-term engagement. This divergence highlights the gap that can exist between formal HR policies and their actual implementation, a phenomenon also identified by [2].

When asked to identify the main factors contributing to their decision to remain with their current employer, participants emphasized three key elements: competitive salary, opportunities for growth, and a positive organizational culture. Although salary was repeatedly mentioned as a foundational incentive, it was rarely cited in isolation. Rather, participants described it as part of a broader value proposition that included learning opportunities, skill development, and an environment that prioritizes mental well-being. These findings are in line with the job embeddedness theory [13, 14], which argues that retention is shaped by a combination of fit, links, and sacrifice, that is, the compatibility between employees and their organization, the strength of interpersonal connections, and the perceived cost of leaving.

A particularly important insight from the interviews was the influence of non-monetary benefits. Participants placed high value on additional perks such as flexible schedules, health insurance, paid certifications, extra vacation days, and company-sponsored wellness programs. These benefits were not merely appreciated; they were often cited as decisive factors in choosing one employer over another. Their significance supports findings by [8, 20], who argue that a well-designed employee value proposition is essential in today's competitive talent landscape.

In exploring participants' awareness of organizational strategies for attraction and retention, most acknowledged that such initiatives exist but questioned their depth and sincerity. Some perceived these strategies as surface-level efforts intended more for employer branding than genuine employee development. This sentiment was particularly strong among those working in larger organizations, where communication between management and staff was described as distant or impersonal. These observations mirror critiques in the literature suggesting that retention strategies often lack customization or sustained follow-through [18, 26].

All interviewees confirmed that they were open to changing jobs, even if currently satisfied. This openness was driven by a desire for better opportunities, higher salaries, more aligned organizational values, or increased project diversity. Their responses reflect a broader generational trend toward mobility and self-directed career development, as previously identified by [3, 5, 9]. Interestingly, when asked about what would lead them to reject a job offer, participants consistently mentioned rigid work structures, poor cultural fit, unclear progression paths, and insufficient recognition—factors often underemphasized in traditional HR planning but increasingly central to Generation Z expectations.

In summary, the results confirm that Generation Z professionals in engineering and technology roles prioritize a blend of financial stability, professional development, and cultural alignment. While competitive pay remains a basic requirement, it is the broader ecosystem of support, namely flexibility, transparency, and recognition, that ultimately fosters retention. Organizations that fail to respond to these expectations risk becoming less attractive to a generation that is both purpose-driven and highly attuned to its personal and professional growth.

5. Discussion, Conclusion and Implications

This study provides a nuanced understanding of how Generation Z professionals working in engineering and technology-oriented roles perceive organizational efforts to retain talent. The results confirm a generational shift in the meaning of professional fulfillment, challenging the effectiveness of traditional, salary-centric retention models. Although competitive compensation remains relevant, participants consistently highlighted the importance of non-financial factors such as flexible working arrangements, continuous learning, mental health support, and alignment with organizational values. These findings corroborate the work of Pandita and Ray [7] and Ferreira *et al.* [8], who argue that modern retention strategies must address the whole employee experience.

A notable contribution of this research lies in its focus on the authenticity of organizational culture. Many participants expressed skepticism toward HR practices that appeared to serve branding purposes rather than employee development. This echoes Gabrielova and Buchko [4], who suggest that Generation Z employees are quick to detect and disengage from perceived inauthenticity. In this context, organizational culture is not merely a support mechanism but a central component of perceived value and psychological contract fulfillment.

Another important finding relates to career mobility. Participants expressed a strong openness to changing jobs—not necessarily due to dissatisfaction but as a proactive strategy for personal growth and challenge. This confirms earlier research by Schroth [3] and Böhlich, Hindley, and Müller [5], who note Generation Z's low organizational loyalty and preference for dynamic career paths. The implication for employers is clear: retention efforts must extend beyond short-term incentives and focus on building adaptive, value-driven workplaces that accommodate evolving ambitions.

From a practical standpoint, this study suggests that engineering organizations need to rethink and redesign their approach to talent retention. Rather than relying solely on financial rewards, companies should adopt a more holistic strategy that includes long-term development plans, meaningful performance recognition, and transparent, values-driven leadership. Flexibility should be institutionalized as a standard practice—not treated as an exception—particularly in fields where digital tools support remote and asynchronous work. Organizations that prioritize well-being, offer tailored professional growth opportunities, and foster inclusive cultures are more likely to earn the commitment of younger professionals.

Cultural alignment emerged as a decisive factor in both job satisfaction and decision-making regarding future employment. Participants were acutely aware of whether organizational behavior matched stated values. Inconsistent messaging was viewed as a signal of weak leadership or lack of respect for employees, which, in turn, undermined

retention. This insight reinforces the view that successful HR strategies must be integrated across all levels of the organization and consistently reinforced through action—not just communication, as emphasized by Gallardo-Gallardo, Thunnissen, and Scullion [2].

Despite its contributions, this study is not without limitations. The sample was intentionally small and non-random, limiting the generalizability of results. Future research would benefit from including a larger, more diverse sample and from employing mixed methods that combine qualitative insights with quantitative analysis. Furthermore, this study examined only the employee perspective. Including the viewpoints of HR managers and executives would provide a more holistic understanding of how retention strategies are conceived, implemented, and experienced across organizational levels.

Longitudinal research could also add value by tracking how the expectations and engagement levels of Generation Z professionals change over time and across life stages. As new technologies continue to reshape the engineering landscape, further studies might explore how emerging trends such as artificial intelligence, hybrid collaboration tools, and decentralized teams impact the design and effectiveness of talent management practices.

In conclusion, retaining young professionals in engineering and technology fields requires more than competitive pay. It demands a deliberate and human-centered approach that reflects the values, aspirations, and lived experiences of a generation redefining the future of work. Organizations that are prepared to listen, adapt, and evolve their human resource strategies accordingly will not only reduce turnover but also build more innovative, engaged, and future-ready teams.

6. References

1. Becker BE, Huselid MA, Beatty RW. The differentiated workforce: transforming talent into strategic impact. Boston: Harvard Business Press; 2009.
2. Gallardo-Gallardo E, Thunnissen M, Scullion H. Talent management: context matters. The International Journal of Human Resource Management. 2020;31(4):457–473.
3. Schroth H. Are you ready for Gen Z in the workplace? California Management Review. 2019;61(3):5–18.
4. Gabrielova K, Buchko AA. Here comes Generation Z: Millennials as managers. Business Horizons. 2021;64(4):489–499.
5. Böhlich S, Hindley C, Müller MC. Enhancing employer attractiveness: the impact of COVID-19 on Generation Z. In: Proceedings of the European Conference on Management, Leadership and Governance; 2022 Nov.
6. Akcigit U, Grigsby J, Nicholas T. The rise of American ingenuity: innovation and inventors of the golden age. National Bureau of Economic Research; 2017. Report No.: w23047.
7. Pandita D, Ray S. Talent management and employee engagement – a meta-analysis of their impact on talent retention. Industrial and Commercial Training. 2018;50(4):185–199.
8. Ferreira AI, Martinez LF, Nunes FG, Duarte H. Gestão de Recursos Humanos para Gestores. 1st ed. Lisboa: Editora RH; 2015.
9. Boštjančič E, Slana Z. The role of talent management comparing medium-sized and large companies – major challenges in attracting and retaining talented employees. Frontiers in Psychology. 2018;9:1750.
10. Sivam A, Dieguez T, Ferreira LP, Silva FJ. Key settings for successful open innovation arena. Journal of Computational Design and Engineering. 2019;6(4):507–515.
11. Despres C, Hiltrop JM. Human resource management in the knowledge age: current practice and perspectives on the future. Employee Relations. 1995;17(1):9–23.
12. Kiazad K, Holtom BC, Hom PW, Newman A. Job embeddedness: a multifoci theoretical extension. Journal of Applied Psychology. 2015;100(3):641.
13. Mitchell TR, Holtom BC, Lee TW, Sablynski CJ, Erez M. Why people stay: using job embeddedness to predict voluntary turnover. Academy of Management Journal. 2001;44(6):1102–1113.
14. Dechawatanapaisal D. Employee retention: the effects of internal branding and brand attitudes in sales organizations. Personnel Review. 2018;47(3):675–693.
15. Moen P, Kelly EL, Fan W, Lee SR, Almeida D, Kossek EE, *et al*. Does a flexibility/support organizational initiative improve high-tech employees' well-being? Evidence from the work, family, and health network. American Sociological Review. 2016;81(1):134–164.
16. Chiavenato I. Gestão de pessoas: o novo papel dos recursos humanos nas organizações. 4th ed.
17. Král P, Richterová M, Králová V. Why does talent leave organizations? Talent retention of trainee program graduates. In: ECMLG 2022 18th European Conference on Management, Leadership and Governance. Academic Conferences and Publishing Limited; 2022 Nov.
18. Alves D, Dieguez T, Conceição O. Retaining talents: impact on innovation. In: ECMLG 2019 15th European Conference on Management, Leadership and Governance. Academic Conferences and Publishing Limited; 2019. p. 36.
19. Dieguez T, Loureiro P, Ferreira I. The gap between the expectations of Gen Z and organizations in Industry 4.0. In: 2024 International Conference on Intelligent Systems and Computer Vision (ISCV). IEEE; 2024 May. p. 1–6.
20. Pandita D, Bedarkar M. Factors affecting employee performance: a conceptual study on the drivers of employee engagement. Prabandhan: Indian Journal of Management. 2015;8(7):29–40.
21. Turner H. Generation Z enters the workplace. HR Future. 2018;(3):30–31.
22. Vidal IG. Desafios de gestão das diferenças geracionais: o caso da Câmara Municipal de Lagos [Master's thesis]. Universidade do Algarve (Portugal); 2020.
23. Carmo H, Ferreira M. Metodologia da Investigação – Guia para Auto-aprendizagem. 2nd ed. Lisboa: Universidade Aberta; 2008. p. 15–16.
24. Dokadia A, Rai S, Chawla D. Multigenerational differences in work attributes & motivation: an empirical study. Indian Journal of Industrial Relations. 2015:81–96.
25. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77–101.
26. Nayak B, Bhattacharyya SS, Kumar S, Jumnani RK. Exploring the factors influencing adoption of health-care wearables among Generation Z consumers in India. Journal of Information, Communication and Ethics in Society. 2022;20(1):150–174.