Structural Equation Model of Factors Affecting Employee Learning at Day Insurance Company Based on Heutagogy Approach

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Abstract

The study aimed to investigate the factors influencing employee learning based on the heutagogy approach at Day Insurance Company. By focusing on individual, organizational, and environmental factors, the research sought to identify their contributions to self-determined learning in a workplace context. The study further aimed to validate a structural equation model of these factors and their relationships with employee learning outcomes, providing insights for fostering heutagogical practices in organizations. A quantitative survey-based research design was employed to collect data from employees of Day Insurance Company. A researcher-designed questionnaire was developed to assess factors influencing heutagogical learning, which included individual (e.g., motivation, job satisfaction), organizational (e.g., managerial support, feedback mechanisms), and environmental (e.g., socio-cultural factors) dimensions. The sample consisted of 230 employees, selected using the Cochran formula. Data were analyzed using SPSS for descriptive statistics and SmartPLS for structural equation modeling to evaluate the relationships among variables and the overall model fit. The results revealed that individual factors had the strongest influence on employee learning outcomes, with motivation and job satisfaction emerging as critical contributors. Organizational factors, such as managerial support, job expectations, and technological infrastructure, also significantly impacted learning outcomes, while environmental factors played a comparatively weaker role. The model demonstrated a strong fit ($R^2 = 0.834$), indicating that the identified factors accounted for 83.4% of the variance in employee learning outcomes. These findings highlight the importance of both individual agency and organizational support in implementing heutagogical learning practices. The study underscores the effectiveness of the heutagogy approach in fostering employee learning, with individual and organizational factors playing pivotal roles. Organizations should prioritize strategies that enhance motivation, provide supportive feedback, and invest in technological infrastructure to support self-determined learning. These findings contribute to the growing body of research on heutagogy and its practical applications in workplace learning.

Keywords: *Heutagogy, Employee Learning, Self-Determined Learning, Organizational Support, Structural Equation Modeling, Workplace Training*

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1. Introduction

Heutagogy is grounded in the principles of self-determined learning, where learners are empowered to take charge of their learning processes [1, 2]. Blaschke (2021) highlights that heutagogy not only prepares learners for lifelong learning but also equips them with the capacity to navigate and adapt to change, making it a vital approach in contemporary education [3]. This perspective is echoed by Gillaspy and Vasilica (2021), who emphasize the role of heutagogical design in fostering digital self-determined learners, particularly in higher education [4]. Similarly, Blaschke and Marín (2020) argue for the integration of heutagogy with technological tools such as e-portfolios to enhance learner agency and facilitate personalized learning experiences [5].

The relevance of heutagogy has been amplified in the post-COVID era, where open and distance learning has become a dominant mode of education delivery. Abdullah and Said (2022) assert that the shift to online and hybrid learning environments has underscored the need for approaches that promote learner independence and engagement [6]. This shift has also been explored in the context of adult online learners, with Addanki et al. (2022) identifying the barriers to engagement and proposing heutagogy as a solution to foster motivation and commitment among learners [7].

In organizational contexts, heutagogy plays a critical role in shaping employee learning and development. Ali Al-Sulaimani and Jantan (2022) discuss the relationship between training and work performance, highlighting the mediating effects of personality dimensions in the learning process [8]. The integration of heutagogy into workplace training programs can thus enhance employee engagement, self-efficacy, and performance. This is supported by studies such as Handayani et al. (2021), who demonstrate the effectiveness of heutagogical approaches in promoting teacher competencies [9], and Halim (2023), who explores the cultural challenges and advantages of heutagogy in mobile-based English as a Foreign Language (EFL) teaching [10].

The shift from traditional teaching methods to heutagogy is also evident in vocational education and training. Amiruddin et al. (2023) propose a structural model of the pedagogy-andragogy-heutagogy continuum, emphasizing its application in vocational high school teacher competencies [11]. This continuum underscores the evolution of teaching and learning practices, where heutagogy represents the highest level of learner autonomy and engagement. Bansal et al. (2020) further explore this continuum in undergraduate medical education, revealing students' positive perceptions of heutagogy as a teaching-learning method [12].

Digital literacy and technological advancements have significantly influenced the adoption of heutagogy in education and workplace settings. Mannan et al. (2023) investigate the relationship between digital literacy and heutagogical learning among college students, highlighting the importance of digital skills in facilitating self-determined learning [13]. Similarly, Marrie (2024) explores the intersection of heutagogy and digital media, emphasizing its potential to drive the digital migration of education systems [1]. Bykasova et al. (2021) further elaborate on the concept of heutagogy in online education, particularly in higher education institutions, where it has proven effective in fostering learner autonomy and engagement [14].

The application of heutagogy extends beyond formal education to include informal and experiential learning contexts. Afna (2023) discusses the role of heutagogy in revitalizing communal piety and leadership development through local wisdom, illustrating its potential to address cultural and contextual learning needs [15]. Gusti Ayu Putu Sukma et al. (2023) highlight the urgency of incorporating heutagogy-based local wisdom into elementary school curricula, emphasizing its role in preserving cultural heritage while promoting learner autonomy [16].

Heutagogy's relevance in the workplace is particularly significant in addressing the challenges posed by Industry 4.0 and Society 5.0. Sumarni and Sudira (2022) emphasize the role of heutagogy in rebuilding vocational self-concept and enhancing adaptability in industrial and societal contexts [17]. Stoten (2020) explores the practical applications of heutagogy in management education, advocating for personalized learning approaches that empower employees to take charge of their professional development [18]. Kisahwan et al. (2022) further investigate the use of heutagogy as an innovation strategy to improve productivity among medical representatives in remote areas during the COVID-19 pandemic [19].

The integration of heutagogy into curriculum design and instructional methodologies has also been the focus of numerous studies. Hafizah et al. (2021) examine the effectiveness of a heutagogical approach in improving scientific writing skills among Indonesian higher education students [20], while Sholikhah et al. (2022) explore its application in distance learning through e-modules for

economic mathematics [21]. These studies demonstrate the versatility of heutagogy in addressing diverse learning needs and contexts.

Heutagogy's emphasis on learner autonomy, critical thinking, and adaptability aligns with the goals of lifelong learning and the development of 21st-century skills. Lock et al. (2021) advocate for the creation of technology-enabled lifelong learning environments through a heutagogical approach [22], while Ibrahim et al. (2022) propose a research framework to examine the relationship between lifelong learning characteristics and preferences for heutagogical activities among university students [23]. These studies highlight the potential of heutagogy to bridge the gap between formal education and lifelong learning.

Despite its numerous advantages, the implementation of heutagogy is not without challenges. Hamdan et al. (2021) identify the conceptual and practical barriers to m-heutagogy acceptance among students, emphasizing the need for a supportive learning environment and adequate technological infrastructure [24]. Suparwito (2020) discusses the role of information technology and learning methodologies during the COVID-19 pandemic, highlighting the importance of addressing digital divides and ensuring equitable access to resources [25]. Vinayan and Harikirishanan (2021) underscore the need for systematic literature reviews and meta-analyses to consolidate the theoretical and practical foundations of heutagogy, enabling its effective implementation across contexts [26].

The present study explores the factors influencing employee learning within the framework of heutagogy, using a structural equation modeling approach to examine the case of Day Insurance Company.

2. Methodology

This research was conducted using a survey method. In this phase, a questionnaire was distributed among the statistical sample to collect the data. The survey method is commonly used in quantitative research as it allows for the collection of a large volume of data in a relatively short period compared to other methods. Additionally, this method offers high accuracy and reliability, and it provides the ability to control conditions due to the diverse sampling methods that can be used. Therefore, a survey method was chosen for this research.

In the quantitative section of the study, the statistical population consisted of all employees of Day Insurance Company, totaling 570 individuals. The sample size was determined using the Cochran formula with a 0.05 margin of error, resulting in a sample size of 230 individuals. As mentioned, the Cochran formula was used to calculate the sample size, and thus 230 individuals were selected.

A researcher-developed questionnaire was designed to assess the implementation processes of heutagogy, the components of heutagogy, the factors affecting heutagogy, and the outcomes of heutagogy. In designing the questionnaire, existing scales and questionnaires were used to refine the items of each component. These included Fisher, King, and Tag's (2001) self-directed learning questionnaire, the self-development inclination questionnaire by Boius et al. (2010), the learning goal orientation scale by Vandewalle (1997), the learning adaptability questionnaire by Ploehart (2006), Cartwright-Hatton and Wells' (1997) metacognitive beliefs scale, Richard's (2006) developmental leadership self-efficacy scale, Maurer et al. (2002, 2003) self-efficacy for self-development scale, Williams and Johnson's (2000) feedback seeking scale, and Grant's (2001) self-reflection scale. These standardized questionnaires were used to construct the heutagogy components, and they served as the framework for the researcher-developed items. The remaining items of the questionnaire were entirely researcher-created, based on a thorough review of the literature and analysis of documents and interviews.

To ensure the validity of the philosophical foundations, objectives, theoretical framework, components, and strategies used in the final model, a researcher-developed model fit questionnaire was also employed. This questionnaire included a total of 7 items related to the philosophy and objectives, 7 items for the theoretical framework, 7 items for the components, and 17 items for the strategies (the model fit questionnaire is included in the appendix). It is worth noting that to validate the model's relevance and fit, this questionnaire was administered to 30 experts in the fields of heutagogy and self-directed learning, and the results are presented in the fourth chapter of the study.

Given that the values for Cronbach's alpha, composite reliability, and AVE all fall within their acceptable ranges, the reliability and convergent validity of the model's external relationships are confirmed.

For data analysis, descriptive statistics (mean, standard deviation, etc.) and inferential statistics, specifically one-sample t-tests (to determine the status of components), were used with the help of SPSS version 26. To assess and determine the validity of the identified factors and

components, Partial Least Squares (PLS) with SmartPLS 4.0.9.2 software was used.

3. Findings and Results

The factors influencing employee learning based on the heutagogy approach were identified through document review and coding of interviews. These factors were classified into three main categories: individual, organizational, and environmental factors. The individual factors include motivation/learning inclination, job involvement, organizational commitment, and job satisfaction. Organizational factors consist of job nature, organizational/managerial support, job expectations, organizational culture, organizational/managerial feedback, and information and communication technology infrastructure. Environmental factors encompass socio-cultural elements.

Table 1 presents the factors affecting employee learning based on the heutagogy approach, as identified through document review and interview coding:

Table 1. Factors Affecting Heutagogy Based on Document Review and Interview Coding

No.	Factor	Components
1	Individual Factors	Motivation/learning inclination, Job involvement, Organizational commitment, Job satisfaction
2	Organizational Factors	Job nature, Organizational/managerial support, Job expectations, Organizational culture, Organizational/managerial feedback, Information and communication technology infrastructure
3	Environmental Factors	Socio-cultural factors

To assess the status of the factors affecting employee learning based on the heutagogy approach at Day Insurance Company, a one-sample t-test was conducted using a fixed value of 3. This test was used to determine whether the mean of the factors affecting employee learning was statistically higher than the value of 3, which would indicate a favorable status for the variable. The results of the t-test are presented below.

Table 2 shows the mean responses for the factors affecting employee learning based on the heutagogy approach. The mean for individual factors was 3.1351, organizational factors had a mean of 3.1594, and environmental factors scored 2.8598. Standard deviations for these variables were 0.77239, 0.72398, and 0.89343, respectively.

Table 2. Mean and Standard Deviation of Factors Influencing Employee Learning Based on Heutagogy

Variable	Mean	Standard Deviation	Sample Size
Individual Factors	3.1351	0.77239	230
Organizational Factors	3.1594	0.72398	230
Environmental Factors	2.8598	0.89343	230

Table 3 presents a comparison of the means of responses to the factors affecting employee learning based on the heutagogy approach with the fixed value of 3. The t-values for individual factors, organizational factors, and environmental factors were 2.652, 3.339, and -2.380, respectively. The significance levels for all variables were less than 0.01, indicating that the null hypothesis, which suggested that the mean of the factors was equal to 3, was rejected. Since the mean scores for individual factors (3.1351), organizational factors (3.1594), and environmental factors (2.8598) were all greater than 3, it can be concluded that the status of these factors is favorable

Table 3. Comparison of Mean Responses for Factors Influencing Employee Learning Against the Fixed Value

Variable	T-Statistic	Degrees of Freedom	Significance Level
Individual Factors	2.652	229	0.009
Organizational Factors	3.339	229	0.001
Environmental Factors	-2.380	229	0.018

The goodness of fit of the model refers to how well the proposed model aligns with the collected data. Therefore, in this section, the model fit for the research was evaluated to ensure its compatibility with the research data and to derive answers to the research questions. The assessment of model fit was conducted in two phases: first, the evaluation of the

measurement model fit (Figure 1), and second, the evaluation of the structural model fit (Figure 4-2). These evaluations are discussed in detail below.

Figure 1 displays the overall model with standardized coefficients, while Figure 2 shows the T-values for the relationships specified in the research model. The T-values on the arrows in Figure 2 represent the relationships, and if the T-value exceeds 1.96, the relationship is considered statistically significant. In the model, all relationships have T-values greater than 1.96, indicating that all relationships are statistically significant at the 5% level.

Table 4 presents the fit indices for the overall model. The SRMR (Standardized Root Mean Square Residual) value was 0.058, which is below the acceptable threshold of 0.08, indicating a good fit. The GOF (Goodness of Fit) index was 0.812, which is greater than the acceptable threshold of 0.25, further confirming the adequacy of the model fit.

Table 4. Model Fit Indices for Heutagogical Learning

Fit Index	Acceptable Range	Observed Value	Result
SRMR	Less than 0.08	0.058	Adequate Fit
GOF	Greater than 0.25	0.812	Adequate Fit

Table 5 shows the R^2 and Q^2 values for the overall model. The R^2 value for the employee learning components based on the heutagogy approach was 0.834, and the adjusted R^2 was 0.832, indicating that the model explains 83.4% of the variance in the latent variables related to employee learning. The Q^2 value, which indicates the predictive relevance of the model, was 0.525, demonstrating the predictive accuracy of the model. The adjusted R^2 values for all variables were greater than 0.50, which indicates a high level of prediction accuracy.

Table 5. R^2, Adjusted R^2, and Q^2 Values for Employee Learning Components Based on Heutagogy

Variable	R^2	Adjusted R^2	Q^2
Employee Learning Components	0.834	0.832	0.525

These findings suggest that the factors identified in the model have a significant impact on employee learning, and the model fit indices confirm the reliability and adequacy of the proposed model for understanding employee learning based on the heutagogy approach at Day Insurance Company.

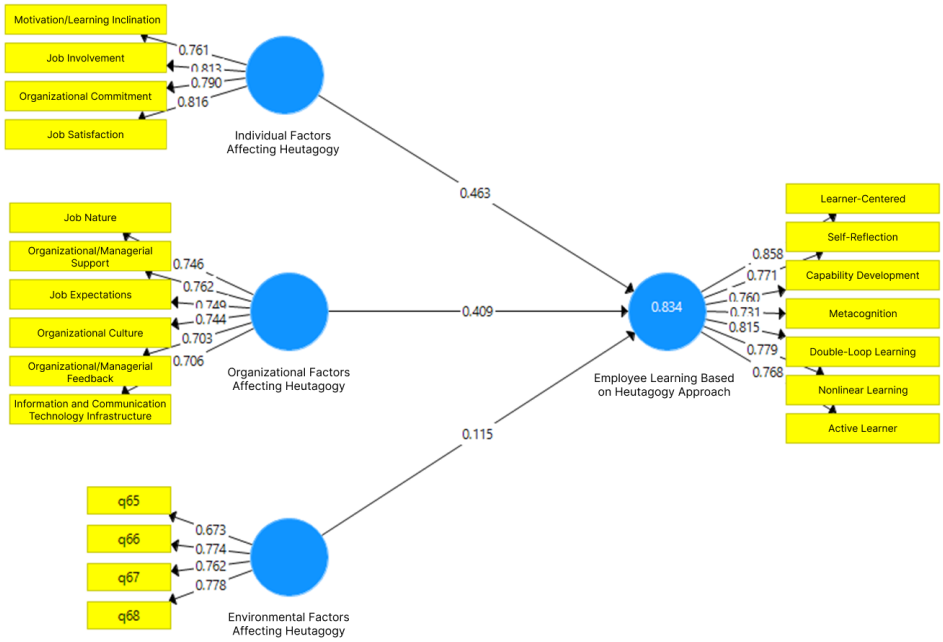

Figure 1. Path Coefficients of the Structural Equation Model (Standardized Values)

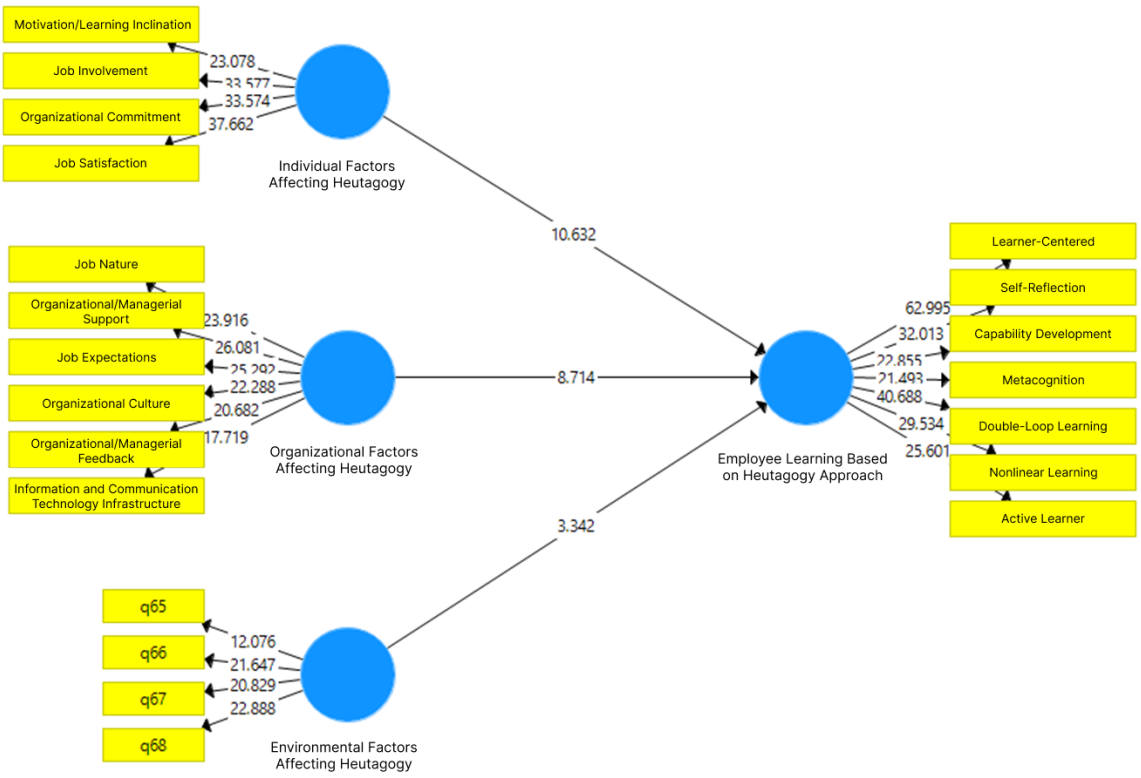

Figure 2. T-Value Results for the Relationships in the Structural Model

4. Discussion and Conclusion

The findings of this study provide significant insights into the factors affecting employee learning based on the heutagogy approach in the context of Day Insurance Company. The results revealed three main categories of factors—individual, organizational, and environmental—that significantly influence the adoption and effectiveness of heutagogical learning. Among these, individual factors, including motivation/learning inclination, job involvement, organizational commitment, and job satisfaction, demonstrated the strongest influence on employee learning outcomes. Organizational factors, such as job nature, organizational/managerial support, job expectations, organizational culture, feedback mechanisms, and technological infrastructure, also played a crucial role. Lastly, environmental factors, including socio-cultural influences, showed a lesser but still noteworthy impact.

The findings revealed that individual factors had the highest impact on employee learning outcomes, as evidenced by the strong path coefficient (0.463). This aligns with previous research emphasizing the critical role of learner motivation and self-efficacy in heutagogical learning environments [3, 5, 14]. Motivation to learn is foundational in heutagogy, as it enables employees to take charge of their learning processes and outcomes. Gillaspy and Vasilica (2021) highlighted the importance of fostering digital self-determination [4], which resonates with the high influence of job involvement and commitment identified in this study.

Furthermore, job satisfaction emerged as a significant individual factor contributing to heutagogical learning. This supports findings by Al-Sulaimani and Jantan (2022), who demonstrated the link between employee satisfaction and work performance, mediated by self-determined learning and personality traits [8]. These results underscore the importance of creating a supportive environment where employees feel empowered and motivated to engage in self-directed learning.

Organizational factors were the second most significant contributors to employee learning, with a path coefficient of 0.409. This finding aligns with studies highlighting the role of organizational support and infrastructure in facilitating heutagogical practices. For instance, Mannan et al. (2023) emphasized the importance of technological infrastructure in enabling self-determined learning, particularly in workplace and online settings. Similarly, Blaschke and Marín (2020) demonstrated how tools like e-portfolios can foster organizational support and enhance learner autonomy.

Among the organizational factors, managerial feedback and job expectations stood out as key components influencing learning outcomes. Previous studies, such as those by Kisahwan et al. (2022), noted that feedback mechanisms and clear expectations are critical for maintaining employee engagement in heutagogical practices, especially in remote or hybrid work settings. Additionally, the findings align with the work of Lock et al. (2021), who highlighted the importance of creating technology-enabled lifelong learning environments within organizations, thus ensuring the continuous development of employees' skills.

Environmental factors, while significant, demonstrated the weakest impact on employee learning outcomes, with a path coefficient of 0.115. Socio-cultural influences were identified as the primary component within this category. These findings align with studies by Gusti Ayu Putu Sukma et al. (2023), who emphasized the role of local wisdom and socio-cultural elements in shaping heutagogical learning practices in diverse contexts [16]. Although the influence of environmental factors was less pronounced compared to individual and organizational factors, their inclusion in the model underscores the holistic nature of heutagogy, which considers the broader context in which learning occurs.

The weaker influence of environmental factors in this study could be attributed to the organizational context of Day Insurance Company, where individual and organizational dynamics likely play a more direct role in shaping employee learning. This finding contrasts with research by Afna (2023), who found a stronger role of environmental factors in communal and cultural learning settings, such as leadership development programs based on local wisdom [15].

The results of this study align well with the theoretical underpinnings of heutagogy, which emphasize learner autonomy, adaptability, and self-determination. Blaschke (2021) and Stoten (2020) highlighted that heutagogy relies on the interplay of individual motivation, organizational support, and contextual factors to foster lifelong learning [3, 18]. This study's findings further support the applicability of these principles in organizational learning contexts, demonstrating that the interplay of individual and organizational factors significantly enhances the effectiveness of heutagogical practices.

The strong relationship between individual factors and employee learning also supports findings by Halim (2023), who explored cultural challenges and advantages in mobile-based heutagogy [10]. Similarly, Ibrahim et al. (2022) emphasized the need to align heutagogical practices with individual preferences and lifelong learning characteristics [23], reinforcing the idea that individual agency is central to the success of heutagogical approaches.

The role of organizational factors, particularly feedback mechanisms and technological infrastructure, is consistent with research by Lynch et al. (2021), who explored the role of information and communication technology (ICT) in heutagogical learning environments [27]. This study further validates their findings, highlighting the importance of a supportive organizational culture and the availability of technological tools in enabling self-directed learning.

Despite its significant contributions, this study is not without limitations. First, the research was conducted within a single organization, which may limit the generalizability of the findings to other organizational contexts or industries. The unique characteristics of Day Insurance Company, including its work environment and employee demographics, may have influenced the results. Additionally, the study relied on self-reported data collected through surveys, which are subject to potential biases such as social desirability bias and recall bias. While the use of structural equation modeling provided robust insights into the relationships between variables, the cross-sectional design of the study limits the ability to infer causal relationships.

Another limitation is the relatively lower impact of environmental factors observed in this study. While this could be attributed to the specific organizational context, it also raises questions about the operationalization and measurement of environmental influences. Future studies may benefit from incorporating qualitative methods, such as interviews or focus groups, to gain a deeper understanding of how socio-cultural factors interact with individual and organizational dynamics in shaping heutagogical learning.

Future research should aim to address the limitations of this study by expanding the scope of analysis to include multiple organizations across different industries and cultural contexts. Comparative studies could provide valuable insights into how organizational and environmental factors influence heutagogical learning in diverse settings. Additionally, longitudinal studies are recommended to explore the causal relationships between individual, organizational, and environmental factors and their impact on employee learning outcomes over time.

Further research could also investigate the role of specific technological tools and platforms in facilitating heutagogical learning. For example, the use of artificial intelligence (AI)

and adaptive learning technologies could be explored to understand their potential in enhancing self-determined learning practices. Finally, future studies should consider integrating mixed methods approaches to capture both the quantitative and qualitative dimensions of heutagogical learning, providing a more comprehensive understanding of the factors and processes involved.

Organizations seeking to implement heutagogical approaches to employee learning should prioritize the development of a supportive culture that fosters motivation, autonomy, and engagement. This includes creating opportunities for employees to set their own learning goals, providing access to technological tools and resources, and establishing clear feedback mechanisms. Managers should play an active role in supporting employees' learning journeys by offering guidance, encouragement, and constructive feedback.

Moreover, organizations should invest in professional development programs that incorporate heutagogical principles, such as self-reflection, capability development, and metacognitive strategies. These programs should be tailored to the needs and preferences of individual employees while aligning with organizational goals and objectives. Finally, organizations should continuously evaluate and refine their learning initiatives to ensure they remain responsive to the evolving needs of employees and the broader work environment.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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