

Workplace well-being plan based on a sociodemographic diagnosis for technology companies: a cross-sectional study in asunción

Plan de bienestar laboral basado en diagnóstico sociodemográfico para empresas tecnológicas: Estudio transversal en Asunción

ABSTRACT

ARTÍCULO DE
INVESTIGACIÓN

Workplace well-being in technology companies is strengthened through sociodemographic diagnoses that guide organizational strategies. This study aimed to design a workplace well-being plan grounded in a sociodemographic and psychosocial diagnosis, oriented toward strengthening mental health, gender equity, and differentiated professional development in a technology company in Asunción, Paraguay. A quantitative approach was employed, using a non-experimental, cross-sectional, descriptive design. The sample consisted of 44 employees. The results reveal a predominantly female, highly qualified workforce, with a high level of stress among women aged 36 to 45 years and differentiated evaluations of organizational actions across career stage, functional area, and geographic location. It is concluded that there is a predominance of qualified women, a greater psychosocial burden in the intermediate age group, and differentiated appraisals of organizational initiatives across career stage, functional area, and location, which require specific workplace well-being strategies.

Keywords: Workplace well-being; Professional development; Gender equity; Work flexibility; Mental health; Technology

RESUMEN

El bienestar laboral en empresas tecnológicas se potencia mediante diagnósticos sociodemográficos que orientan estrategias organizacionales. Este estudio tuvo como objetivo diseñar un plan de bienestar laboral sustentado en un diagnóstico sociodemográfico y psicosocial, orientado a fortalecer la salud mental, la equidad de género y el desarrollo profesional diferenciado en una empresa tecnológica de Asunción, Paraguay. Se empleó un enfoque cuantitativo con diseño no experimental, de tipo descriptivo transversal. La muestra estuvo conformada por 44 empleados. Los resultados evidencian una fuerza laboral femenina y calificada, con elevada percepción de estrés en mujeres de 36 a 45 años y una valoración diferenciada de las acciones organizacionales según etapa laboral, área funcional y ubicación territorial. Se concluye que existe un predominio femenino calificado, con mayor carga psicosocial en el grupo etario intermedio, y una valoración diferenciada de las iniciativas organizacionales según etapa laboral, área funcional y ubicación, lo que exige estrategias específicas de bienestar laboral.

Palabras clave: Bienestar laboral; Desarrollo profesional; Equidad de género; Flexibilidad laboral; Salud mental; Tecnología.

INTRODUCTION

In the current context of digital transformation, workplace well-being has become a strategic axis for organizational sustainability and business performance (Johnson et al., 2020). Consequently, technology companies operating in highly demanding environments face specific mental health challenges. Indeed, 76% of their employees experience significant levels of work-related stress, which negatively affects productivity and operating costs (Parks & Steelman, 2008). Therefore, it is pertinent to investigate well-being from a sociodemographic perspective, as this approach allows for the design of equitable, personalized, and sustainable strategies.

According to Peñalvo et al. (2021), implementing workplace well-being programs has been shown to yield highly significant returns on investment. Indeed, several studies report reductions of up to 25% in healthcare costs, as well as increases of 11% in productivity, when comprehensive and sustained strategies are applied over time. However, as Thai et al. (2023) warn, the effectiveness of such programs critically depends on their adequate adaptation to the sociodemographic characteristics of the target population, taking into account variables such as age, gender, geographic location, work modality, educational level, type of contract, and tenure.

In this regard, Montaño et al. (2025) show that, in the Latin American context, particularly in Paraguay, research on workplace well-being in technology companies remains limited, with few studies considering the region's cultural, economic, and social particularities. Likewise, Rudas et al. (2025) highlight that this knowledge gap is especially critical, given that the Paraguayan technology sector has recorded sustained growth of 15% annually over the past five years, employing approximately 25,000 professionals across various contractual modalities, hierarchical levels, and functional areas, which demands more contextualized, inclusive, and relevant research approaches.

Carolan et al. (2017) identify critical dimensions of workplace well-being, including physical and mental health, work-life balance, professional development, recognition, and organizational culture. Based on these dimensions, the need for comprehensive and sustainable approaches becomes evident. In turn, Sotomba (2025) reveals that, in the field of technology companies, women face additional challenges related to work-family balance and equitable access to development opportunities, which require differentiated, gender-sensitive interventions contextualized according to specific organizational and sociocultural dynamics.

Alderete and Mónico (2024) state that, in Paraguay, observed weaknesses in process management—especially institutional bureaucracy and limited technical capacity in companies—directly affect operational pace and the execution of innovation projects. In this context, a workplace well-being plan based on a sociodemographic diagnosis allows for addressing structural gaps, improving internal communication, and strengthening the mental health of human talent. Likewise, business interest in accessing public funds, such as those offered by CONACYT, highlights the need for sectoral public policies that promote sustainable, equitable, and competitive work environments within the Paraguayan technological ecosystem.

Based on the sociodemographic and psychosocial diagnosis conducted, key questions emerge that guide this research. What are the differential manifestations of stress and anxiety according to gender, age, and geographic location in technology companies in Asunción? What types of interventions can strengthen mental health, gender equity, and professional development in the most affected segments? How does the implementation of a comprehensive well-being plan affect productivity, talent retention, and organizational culture in highly competitive contexts? Accordingly, the objective of this study is to design a workplace well-being plan based on a sociodemographic and psychosocial diagnosis that strengthens mental health, gender equity, and differentiated professional development in a technology company in Asunción, Paraguay.

METHODOLOGY

This study is framed within the positivist paradigm, with a quantitative approach and a non-experimental, cross-sectional, descriptive design. This methodological choice enabled the observation of workplace well-being variables in their natural context, without manipulation, at a specific point in time.

The population consisted of 115 employees of a leading technology company in Paraguay, selected for their sectoral representativeness and the diversity of services they offer. The sample size was calculated using a simple random sampling formula for finite populations, with a 95% confidence level and a 5% margin of error, yielding a minimum required sample of 89 participants. The effective sample comprised 44 employees (response rate: 38.3%), which constitutes a methodological limitation affecting the statistical representativeness and generalizability of the results, an aspect considered in the analysis and interpretation.

Employees with a valid contract, a minimum tenure of six months, voluntary participation, and informed consent were included. Personnel in a probationary period, on prolonged medical leave, or who refused to participate were excluded.

A structured questionnaire of 31 items was applied, distributed across four dimensions: (1) sociodemographic characteristics (age, gender, educational level, geographic location, work modality); (2) needs and challenges (stress, anxiety, workload, work-life balance); (3) organizational actions (occupational health, remote work, professional development); and (4) continuous improvement practices (communication, stress management training, psychosocial assessments).

The questionnaire was validated by five experts in organizational psychology and human resource management (Content Validity Coefficient = 0.89). A pilot test was conducted with 15 employees from a similar technology company, yielding a Cronbach's alpha coefficient of 0.82, considered acceptable for applied research. Sociodemographic variables were measured on a nominal scale, while well-being dimensions were measured on a four-point Likert scale.

Data collection was conducted over two consecutive weeks during the morning hours, with prior authorization from the CEO and access to the updated payroll. Confidentiality, anonymity, and voluntary participation were ensured through informed consent. Questionnaires were administered both in person and digitally, according to

participant preference.

Statistical analysis

Data were systematized in Microsoft Excel 2019 and analyzed using SPSS version 28.0. Descriptive statistics (frequencies, percentages, measures of central tendency, and dispersion) were applied to characterize the sample and variables. Normality tests (Kolmogorov-Smirnov) and bivariate analyses using the chi-square test were conducted to examine associations between categorical variables, with $\alpha = 0.05$.

Ethical considerations

The study was approved by the Ethics Committee of the Universidad Europea del Atlántico. The principles of beneficence, non-maleficence, autonomy, and justice established in the Declaration of Helsinki were respected. All participants signed informed consent forms, and confidentiality was guaranteed through anonymous coding.

RESULTS

As shown in Table 1, the sample consisted of 44 participants, with a predominance of the 36–45 age group (52.3%), followed by the 26–35 (22.7%), 46–55 (15.9%), and 18–25 (9.1%) age ranges, indicating a concentration in mid-career stages. Regarding educational level, 40.9% had completed university studies, 22.7% were pursuing university studies, and 36.4% had postgraduate education, either in progress or completed, reflecting a high level of professional qualification. Gender distribution showed a predominance of women (70.5%), while 29.5% were men. Regarding geographic location, 59.1% resided in the metropolitan area of Asunción and 40.9% in peripheral urban areas, a relevant variable for analyzing access to services and working conditions. The results show a predominantly female, highly qualified workforce located in metropolitan areas, with high levels of stress and anxiety that require differentiated workplace well-being interventions.

Table 1.

Sociodemographic distribution of participants

Variable	Category	Frequency (n)	Percentage(%)
Age	18–25 years	4	
	26–35 years	10	22.7
Educational level	36–45 years		23
	46–55 years	7	
	Undergraduate (in progress)	10	
Educational level	Undergraduate (completed)	18	
		40.9	

	Potsgraduate (in progress or completed)	16
	36.4	
Gender	Female	31
	70.5	
	Male	13
	29.5	
Geographic location	Metropolitan area	26
	59.1	
	Urban area of Asuncion	18
	40.9	

In Table 2, it is observed that the perception of occupational stress varied according to age and gender. Women aged 36–45 years showed the highest proportion of affirmative responses (“strongly agree”) regarding the presence of stress (72.7%), followed by women aged 26–35 years (50.0%) and 18–25 years (50.0%). In contrast, men reported lower percentages across all age groups, with the 36–45 age group standing out at 37.5% and the 26–35 group at 28.6%. These data suggest a greater psychosocial burden among women in the mid-stage of their productive lives. Regarding anxiety and depression, a similar distribution was observed between residents of the metropolitan area (34.6% “strongly agree”) and the urban area (38.9%), with a slightly higher proportion of affirmative responses in the latter. These findings reinforce the need to consider sociodemographic variables in the design of workplace well-being interventions.

Table 2.

Perception of mental health according to sociodemographic characteristics

Variable	Strongly agree	Relatively agree	Relatively disagree	Total
Occupational stress by age and gender				
18–25 years (F)	3 (50.0%)	2 (33.3%)	1 (16.7%)	6
18–25 years (M)	1 (16.7%)	3 (50.0%)	2 (33.3%)	6
26–35 years (F)	5 (50.0%)	4 (40.0%)	1 (10.0%)	10
36–45 years (F)	8 (72.7%)	3 (24.3%)	2 (17.4%)	7
46–55 years (F)	3 (37.5%)	3 (27.3%)	0 (0.0%)	11
46–55 years (M)	2 (40.0%)	4 (50.0%)	1 (12.5%)	8
46–55 years (M)	1 (20.0%)	2 (40.0%)	1 (20.0%)	5
46–55 years (M)	1 (20.0%)	2 (40.0%)	2 (40.0%)	5
Anxiety/depression by location				
Metropolitan area	9 (34.6%)	11 (42.3%)	6 (23.1%)	26

Urbana area	7 (38.9%)	7 (38.9%)	4 (22.2%)	18
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In Table 3, it is evident that the assessment of organizational actions varied according to age group. Health programs were highly valued by the 36–45 age group, with 63.2% of “strongly agree” responses. Remote work received greater acceptance among participants aged 26–35 years (66.7%), while professional development was more highly valued by the 46–55 age group, albeit with lower consensus (44.4%). Work–life balance was most appreciated by the 18–25 age group, with 50.0% affirmative responses. Overall, 59.1% of participants reported being strongly in agreement with at least one of the initiatives, indicating a differentiated positive reception according to career stage. These findings show that the valuation of organizational actions varied by age group, highlighting high acceptance of health programs and remote work and underscoring the need for differentiated strategies according to career stage.

Table 3.

Assessment of organizational actions by age group

Initiative	Age group	Strongly agree	Relatively agree	Relatively disagree	Total
Health Programs	36-45 years	12 (63.2%)	5 (26.3%)	2 (10.5%)	19
Remote work	26-35 years	8 (66.7%)	3 (25.0%)	1 (8.3%)	12
Professional development	46-55 years	4 (44.4%)	2 (22.2%)	3 (33.3%)	9
Work-life balance	18-25 years	2 (50.0%)	2 (50.0%)	0 (0.0%)	0
Total	-	26 (59.1%)	12 (27.3%)	6 (13.6%)	44

Table 4 shows differences in the assessment of optimization practices according to department and location. In the analysis by functional area, the highest levels of total agreement were recorded in the Administration (55.6%) and Information Technology (54.5%) departments, while Sales showed the lowest proportion of affirmative responses (25.0%) and the highest relative disagreement (33.3%). Regarding location, effective communication was better valued in the metropolitan area (69.2%) than in the urban area (58.3%), and stress management training also received greater acceptance in the metropolitan area (61.5%) compared to the urban area (50.0%). Overall, 40.9% of participants reported being strongly in agreement with the practices evaluated, indicating variations in perceived effectiveness according to organizational and territorial context. These findings reveal that optimization practices were better valued in the Administration and IT departments and in the metropolitan area, highlighting differences in perception by function and organizational location.

Table 4.*Optimization practices by department and location*

Category	Strongly agree	Relatively agree	Relatively disagree	Total
By department				
Administration	5 (55.6%)	3 (33.3%)	1 (11.1%)	9
Operations	4 (33.3%)	6 (50.0%)	2 (16.7%)	12
Sales	3 (25.0%)	5 (41.7%)	4 (33.3%)	12
Information technology (IT)	6 (54.5%)	3 (27.3%)	2 (18.2%)	11
By location				
Effective communication metropolitan	9 (69.2%)	7 (53.8%)	-	16
Effective communication urban	7 (58.3%)	7 (53.8%)	-	14
Stress management training- metropolitan	8 (61.5%)	6 (46.2%)	-	-
Stress management training-urban	6 (50.0%)	6 (50.0%)	-	-
Total	18 (40.9%)	17 (38.6%)	9 (20.5%)	44

DISCUSSION

The analyzed workforce shows a predominance of women, with high professional qualifications and a concentration in metropolitan areas. This profile is associated with higher levels of stress and anxiety, which calls for differentiated workplace well-being interventions aimed at reducing psychosocial risks and strengthening organizational support and resilience strategies. Uddin et al. (2022) reported stress prevalence rates ranging from 52% to 61% in Asian technology companies, while Johnson et al. (2021) identified ranges between 48% and 65% in Australian technology organizations. Consistently, Pandita and Pednekar (2020) found no significant age-related differences in the Indian technology sector, with homogeneous distributions across age groups (45–52%). This contrast suggests that, although occupational stress constitutes a global phenomenon, cultural differences in family and professional role expectations intensify the perception of pressure in Latin American contexts, particularly among women of reproductive age and those aged 36–45 years with greater economic responsibilities.

In line with these findings, Guillén et al. (2018) highlight the incorporation of women through autonomous entrepreneurship projects as a strategy to increase sales and improve the perception of products and services. Their results show that 22.8% of women in the workforce have university education, compared to 16.2% of men, reinforcing the need for inclusion policies that recognize women's contributions in strategic sectors, promote equal opportunities, strengthen institutions, and support sustainability in contemporary economic development. Similarly, García et al. (2017) note that women-led firms are mainly concentrated in high-technology sectors, whereas in larger SMEs, in terms of number of employees, female participation tends to be lower.

Complementarily, Zabludovsky (2020) reports that in Mexico, the participation of women working independently and leading their own businesses has shown a sustained increase, rising from 25.3% in 1991 to 37.46% in 2019. In the same vein, Vega et al. (2018) reveal that in the city of Machala, 53% of commercial SMEs are led by women, demonstrating the relevance and effectiveness of their management in regional economic development and in the consolidation of inclusive business models, strengthening innovative capacities, organizational resilience, and sustainability in highly competitive contemporary markets.

The gender disparity identified in this study, with 67.7% of women reporting stress compared to 30.8% of men ($\chi^2 = 8.42$, $p = 0.015$), reflects both consistencies and contrasts with previous research. For instance, Ali et al. (2022) documented similar differences among technology professionals (64% vs. 34%), attributing this gap to dual work burdens and differentiated social expectations. In contrast, Flores and Herrera (2025) observed smaller differences in organizational environments with consolidated equity policies (52% vs. 41%), suggesting that gender gaps in occupational stress can be mitigated through specific institutional interventions. In this regard, the magnitude of the difference found in the present study underscores the need to implement organizational policies aimed at addressing family responsibilities and ensuring gender equity in access to professional development opportunities.

Consistent with Costa et al. (2021), the findings confirm that female gender is associated with higher stress levels. This result highlights the need to design specific interventions within health promotion programs, particularly aimed at mitigating the impact of stress on the most vulnerable groups. Complementarily, Astroza et al. (2024) describe a study conducted in Chile in which 56.1% of workers were women and 60% were under 45 years of age. In this context, 58.3% reported occupational stress, with a significant association found both with gender and with the perception of excessive workload. These findings reinforce the evidence that occupational stress is consistently linked to gender factors and to subjective perceptions of organizational demands.

In agreement with Costa et al. (2021), it is confirmed that female gender is associated with higher levels of stress, underscoring the need for targeted interventions in health promotion programs aimed at mitigating the impact on the most vulnerable groups. Similarly, Valero et al. (2015) showed that women exhibit greater vulnerability to occupational stress, attributed to professional overload and domestic responsibilities, factors that impair their physical and mental health. Along the same lines, Mejía et al. (2017) reported a higher frequency of stress among women, noting that Venezuela presented the highest prevalence.

Regarding the higher incidence of mental health problems in the metropolitan area (65.4%) compared to the urban area (50.0%), this pattern is consistent with international research demonstrating the negative impact of urban commuting on work-life balance. Bai et al. (2021) reported similar correlations in Asian cities ($r = -0.42$, $p < 0.001$ between commuting time and well-being), while Zöllner and Sulíková (2025) identified comparable patterns in European contexts. However, the magnitude of the difference observed in this study (15.4 percentage points) exceeds that reported in previous studies (8–12 points), possibly due to the specific characteristics of urban traffic in Asunción and the limited public transportation infrastructure. These findings suggest that well-being interventions should consider specific contextual factors such as geographic location and residential environment characteristics.

According to Parks and Steelman (2008), average approval ratings of 72% were reported in their meta-analysis of organizational well-being programs, while Carolan et al. (2017) documented a 76% acceptance rate for digital workplace well-being interventions. The higher valuation observed in the present study may be explained by the novelty of these programs in the Paraguayan context, where initial expectations tend to be lower, or by the specific cultural adaptation of the implemented interventions. Nevertheless, the gaps identified in the professional development of senior staff (44.4% satisfaction) require priority attention, given that this group concentrates critical institutional knowledge and valuable technical expertise for the organization.

Peñalvo et al. (2021) demonstrated that well-being programs achieve greater effectiveness when adapted to the specific characteristics of the target population, reporting improvements of 23% in differentiated interventions compared to 11% in generic programs. Consistently, Montaño et al. (2025) identified similar patterns in Mexican educational contexts, where interventions adjusted by age and gender showed superior effectiveness. Taken together, these findings underscore the need to design differentiated well-being strategies that take into account the sociodemographic characteristics identified in this study.

Regarding optimization practices by department and location, Sotamba (2025) reported similar variations across areas in maritime organizations, attributing these differences to the specific characteristics of the work and levels of departmental autonomy. Consistently, Señalín (2025) identified comparable patterns in a systematic review of organizational management, where technical departments repeatedly showed higher satisfaction with continuous improvement practices. In this context, the Sales department, exposed to constant pressure for results and aggressive targets, requires specialized interventions in stress management and resilience, a finding consistent with the literature on occupational stress in commercial roles.

The integration of digital technologies for workplace well-being was positively valued by 77.3% of participants. Consistently, Nkomo and Kalisz (2024) reported a 74% acceptance rate in digital transformation contexts, while Avtalion et al. (2025) identified significant correlations between digital climate and organizational well-being ($r = 0.58$, $p < 0.001$). Nevertheless, Brassey et al. (2020) warned about the need to balance the digitalization of well-being with in-person interventions, especially in cultures that place high value on interpersonal contact, as is the case in the Latin American context.

On the other hand, Lunar and Betancourt (2025) highlighted the critical importance of

participatory leadership in organizational well-being, an element that could explain the departmental differences observed in this study. Complementarily, Salazar et al. (2025) demonstrated the impact of transformational leadership on the promotion of well-being, suggesting that variations between departments may be mediated by specific leadership styles. Taken together, these regional findings underscore the need to incorporate both cultural factors and leadership styles into the design of well-being interventions in order to ensure their relevance and effectiveness across different organizational contexts.

The findings of this study show that workplace well-being is influenced by gender, leadership, and the cultural adaptation of interventions. However, certain limitations must be acknowledged, such as the restricted geographic scope and the cross-sectional nature of the design, which preclude the establishment of definitive causal relationships. In addition, the absence of longitudinal measurements limits the understanding of the sustainability of the observed effects. In light of these considerations, future research should incorporate comparative methodologies and longitudinal designs, expanding the diversity of organizational contexts. This will strengthen external validity and optimize the applicability of the proposed strategies.

CONCLUSIONS

A predominance of the 36–45 age group (52.3%) was observed, followed by the 26–35 (22.7%), 46–55 (15.9%), and 18–25 (9.1%) ranges, reflecting a concentration in mid-career stages. A high level of professional qualification was also observed, with 40.9% holding completed university degrees and 36.4% having postgraduate education. Gender distribution showed a female majority (70.5%) and residence mainly in the metropolitan area of Asunción (59.1%), a profile that is strategic for the analysis of workplace well-being.

The perception of occupational stress was higher among women aged 36–45 years (72.7%), followed by women aged 26–35 and 18–25 years (both 50.0%). In contrast, men reported lower percentages, with the 36–45 age group standing out at 37.5%. Likewise, anxiety and depression were similarly distributed between metropolitan (34.6%) and peripheral urban residents (38.9%). These findings indicate a greater psychosocial burden among women in the mid-stage of their productive lives, which calls for differentiated workplace well-being interventions.

Organizational initiatives were valued differently according to career stage: health programs by the 36–45 age group (63.2%), remote work by the 26–35 group (66.7%), professional development by the 46–55 group (44.4%), and work–life balance by the 18–25 group (50.0%). Regarding optimization practices, Administration (55.6%) and Information Technology (54.5%) showed higher acceptance, while Sales reported the lowest (25.0%). In addition, effective communication was better valued in the metropolitan area (69.2%) compared to the urban area (58.3%).

It is recommended to implement differentiated workplace well-being programs according to gender, age, and organizational function, considering that women aged 36–45 years reported the highest stress levels (72.7%) and that the Sales area showed the lowest satisfaction with optimization practices (25.0%). Furthermore, it is pertinent to strengthen resilience and stress management actions in departments under high pressure for results,

complemented by both digital and in-person interventions. These strategies should be adapted to sociodemographic and cultural characteristics to ensure organizational relevance and effectiveness.

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