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Digital talent and job satisfaction in the administrative staff of a public university with WarpPLS 8.0

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A B S T R A C T

Job satisfaction and digital talent are topics of growing interest in the context of digital transformation. Digitalization is changing the way organizations operate and how employees perceive their work. The state and its administrative staff is no exception, as these capabilities are essential to perform operational tasks that underpin the public institution's documentary processes. This study investigates the influence of digital talent (independent variable) on job satisfaction (dependent variable), employing structural equation modeling (SEM) using WarpPLS software. Digital Talent is broken down into three sub-variables: Digital Competencies of Employees (DCE), Capacity for Digital Innovation and Creativity (CIDC) and Adaptability and Continuous Learning (ACL), while Job Satisfaction is measured through two sub-variables: Work Environment (WE) and Professional Development Opportunities (PDO). The analyses revealed that Capacity for Innovation and Digital Creativity (CIDC) has a significant impact on Work Environment, with a path coefficient (β) of 0.13 ($p = 0.01$). Similarly, adaptability and continuous learning (ACL) positively influence the work environment, with a path coefficient (β) of 0.10 ($p = 0.04$). In addition, a strong relationship was found between professional development opportunities (PDO) and work environment, with a path coefficient (β) of 0.68 ($p < 0.001$). For the relationship between digital competencies (DCE) and career development opportunities, the path coefficient was 0.10 ($p = 0.04$). Digital talent is a key predictor of job satisfaction in administrative staff. The results suggest that investing in the development of digital capabilities, especially innovation and creativity, as well as adaptability, is essential to improve the work environment and career development opportunities.

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1. Introduction

In today's digital era, the knowledge and use of office automation tools and tools linked to information technologies have become a determining factor for individual, professional and organizational success. In Peru, there is a gap between the needs of companies and the capabilities of the workforce in terms of digital talent (Novella & Rosas-Shady, 2023), in the public university environment, administrative staff is no exception, since their efficient performance depends largely on the mastery of digital skills to perform tasks such as information management, online communication, reporting and customer service. Several studies have demonstrated the positive relationship between digital talent and job satisfaction of administrative staff in institutions (Chinchilla & Cely, 2021; García-Izquierdo et al., 2022). The development of these skills allows workers to be

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more autonomous and efficient in their work, allowing them to have better opportunities for professional development, collaborate and communicate more effectively with their colleagues, streamline their work and feel updated.

To develop the digital talent of staff (administrative and non-administrative), it is essential to offer training programs, ensure access to the necessary digital tools, manage the change to a new digital reality and foster an organizational culture that values and supports the development of these skills; so investing in digital talent brings benefits such as increased productivity and efficiency, cost reduction, better customer service and greater capacity for innovation. Digital talent encompasses not only technical skills, but also the ability to innovate and continuously adapt to new challenges (Diaz-Chao et al., 2022) and plays a crucial role in influencing employee job satisfaction; hence, digital leadership, information technology and digital competence are affecting employee performance (Ethem et al., 2022; Hidayat et al., 2023). Moreover, the rise of Generation Z, characterized by its attachment to technology and unique traits, highlights the importance of understanding how workload, job satisfaction, and psychological conditions influence turnover intention among this generation in digital industries (Ardiansyah et al., 2023). Additionally, since digital talent increases productivity or administrative operational efficiency, it has a positive impact on job satisfaction (Pusterla, 2022), it is the responsibility of the institutions or organizations and the employees themselves to train and qualify themselves in order to have these technological skills.

Job satisfaction is a critical factor that influences employee productivity and retention (Judge & Kammeyer-Mueller, 2012), at the same time that it establishes an emotional state regarding the work environment (Jiménez et al., 2020); these generated emotions are capable of influencing performance, well-being and work commitment (Susanto et al., 2022), as well as both intrinsic and extrinsic motivation of workers (Cayupe at al., 2023). On the other hand, for Galiano-Coronil et al. (2024) and Díaz et al. (2023), working conditions, corporate image and social relations influence employee satisfaction and well-being, with an improvement in productivity, loyalty and creativity. From a macro perspective, the incorporation of elements linked to government digital transformation involves adapting the culture, organization and processes to use technology, improving efficiency, transparency and security in public services; taking into consideration governance, legal regulations, digital talent, infrastructure and digital services (Cubo et al., 2022).

In the case of the National University of Central Peru (UNCP), the concern for improving educational and administrative quality through the use of digital tools is tacit and inherent to its organizational work, so they must respond proactively to the new demands of the digital world (Colina-Ysea et al., 2024). Complementarily, the need for a digitally talented administrative staff is relevant due to its size and complexity; UNCP has a student population of more than 10,000 students and more than 500 administrative workers, requiring an efficient and modern management of its processes to achieve its academic, outreach, social projection and research objectives (UNCP, 2023). In this context, the present study aims to analyze the relationship between digital talent and job satisfaction of UNCP administrative staff; and to identify strategies for strengthening the theoretical and practical capabilities of information technologies, and thus contribute to the improvement of administrative management, job satisfaction and service quality.

2. Literature Review

Digital Talent: Set of competencies, skills and knowledge that allow employees to use and develop digital technologies effectively in their work environment (Secretariat of Government and Digital Transformation of the PCM of Peru, 2023). In other areas, it is usually considered as Digital Competencies, the same that are associated with skills and technical knowledge necessary to handle digital tools and technologies (Huarcaya & Dávila, 2023). Having an IT culture makes employees more productive and proactive in their work areas and able to share their experiences with others (Inga-Avila et al., 2023). An important component of digital talent is the Digital Innovation and Creativity possessed by the collaborator; this is the ability to apply innovative and creative thinking in problem solving and process improvement through digital technologies (Austin, 2016). Similarly, it is important that collaborators possess personal capabilities and characteristics oriented to adaptability and continuous learning, which gives them the willingness and ability to use new technologies (Hamid, 2022) from training and continuous training, as well as by self-learning. .

Job Satisfaction: Considered as the degree of well-being that employees experience in their work environment. This is a topic of great interest, since it not only influences productivity and organizational functioning, but also the physical and mental health of employees (Pugliesi, 1999); at the same time it is influenced by work values, perception of work rewards and control over work situations (Kalleberg, 1977). On the other hand, the conditions of the workplace influence the well-being of employees and their respective performance, taking into account aspects such as: environmental conditions, work climate, predisposition to support, etc., thus ensuring the physical and mental peace of mind of the collaborators (Faragher et al., 2005).

3. Research Model

The research model seeks to relate the variables Digital Talent and Job Satisfaction. To this end, the independent variable Digital Talent is broken down into the independent sub-variables: digital competencies of employees, capacity for innovation and digital creativity, and adaptability and continuous learning of employees. On the other hand, the dependent variable has been broken down into the following dependent sub-variables: work environment and professional development opportunities.

The variables and relationships have been established based on the knowledge of each one of them (Literature Review). The three independent sub-variables are related to the two dependent sub-variables as shown in Figure 1. Similarly, the relationship between Professional Development Opportunities and the work environment has been established as a logical relationship in the dynamics of labor relations.

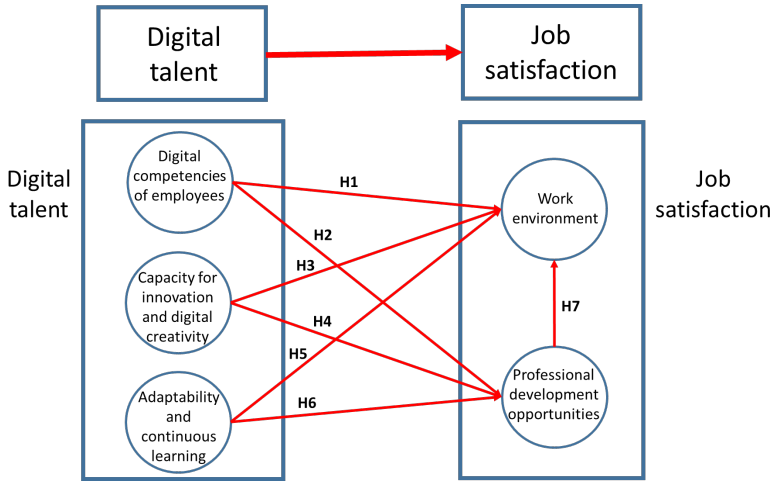

Fig. 1. Research model

Hypothesis: The relationships considered in the research model determine the following hypotheses:

H1: *Employees' digital competencies have a positive effect on the work environment.*
H2: *The digital competencies of employees have a positive effect on professional development opportunities.*
H3: *Employees' capacity for innovation and digital creativity has a positive effect on the work environment.*
H4: *Employees' capacity for digital innovation and creativity has a positive effect on professional development opportunities.*
H5: *Employees' adaptability and continuous learning have a positive effect on the work environment.*
H6: *Adaptability and continuous learning of collaborators have a positive effect on professional development opportunities.*
H7: *Professional development opportunities have a positive effect on the work environment.*

4. Research Methodology

The method and analysis of the research are quantitative associative, as it seeks to know the nature and extent of the relationships between variables (Ñaupas et al., 2018).

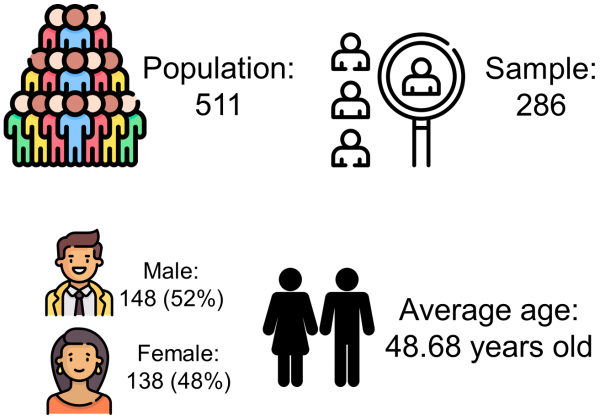

Fig. 2. Sample distribution

To collect data, an electronic form (Google Forms) was used; the research used accidental or convenience sampling to improve information collection. Complex relationships between variables were addressed using structural modeling equations and partial least squares (SEM-PLS), the same that allows simultaneously assessing the existence of a connection or impact between several latent variables using multiple indicators (So et al., 2021). Hair et al. (2017), emphasize that SEM-PLS is used for studies with small samples; in this regard, Ghozali & Latan (2017) highlight that the SEM method requires a minimum sample size of 100 records. In that sense, the study included 286 administrative collaborators (out of a total of 511), with an

average age of 48.68 years, and an age range between 21 and 70 years. Of the participants, 148 were women and 138 were men. See Fig. 2.

5. Results

The data analysis was performed using Warp PLS 8.0 software, model fitting and quality indices; evaluation of the respective measurement model and structural model.

5.1 Model fit and quality indices

The fit and quality indices of a structural model are critical to assess its ability to adequately represent the empirical data and postulated theoretical relationships. These indicators provide a measure of how well the model fits the observed data and, therefore, of the reliability of the inferences that can be drawn (McNeish et al., 2017). A good fit indicates that the model is able to explain a significant proportion of the variance in the endogenous variables and that the relationships between variables are robust and statistically significant. In this study, the results obtained are shown in Table 1 and indicate that the proposed structural model presents an adequate and reliable fit, which supports the stated research hypotheses.

Table 1
Model fit and quality indices

Indicator	Value	Interpretation
Average Path Coefficient (APC)	0.247, p<0.001	The average size of the effects of the exogenous variables on the endogenous variables is moderate and statistically significant.
Average R-squared (ARS)	0.615, p<0.001	The model explains on average 61.5% of the variance of the endogenous variables, which is a good fit.
Average Adjusted R-squared (AARS)	0.610, p<0.001	Similar to the ARS, but adjusted for the number of variables, indicates a good model fit.
Average block VIF (AVIF)	2.458	Multicollinearity among the variables in the model is moderate, although desirably less than 3.3.
Average full collinearity VIF (AFVIF)	2.810	Similar to the AVIF, it indicates moderate multicollinearity.
Tenenhaus GoF (GoF)	0.603	The overall model fit is good, close to the limit of a large fit.
Simpson's paradox ratio (SPR)	1.000	There is no evidence of Simpson's paradox, which is positive.
R-squared contribution ratio (RSCR)	1.000	All variables contribute positively to the R-squared, which is ideal.
Statistical suppression ratio (SSR)	1.000	There is no evidence of statistical suppression.
Nonlinear bivariate causality direction ratio (NLBCDR)	1.000	There is no evidence of nonlinear reverse causality.

From the data indicated, a solid fit and validity is demonstrated, reflecting consistent relationships between the variables studied. The indices show a considerable explanatory capacity, with an average explained variance of more than 0.60, expressing that the independent variables are significant in predicting the dependent variables. Multicollinearity remains at acceptable levels, suggesting that there are no major problems of redundancy between constructs. The absence of statistical suppression and Simpson's paradox reinforces the reliability of the relationships found, and the correct causal direction ensures that the model interpretations are valid. Overall, the results point to a robust and well-fitted model, with potential to provide significant theoretical and practical findings.

5.2 Confirmation of the measurement model

To ensure that the questionnaire results yielded valid data, the responses were assessed by reliability and convergent validity analysis. Table 2 shows the reliability (Cronbach's alpha and composite reliability), convergent validity and discriminant validity which were calculated to evaluate the measurement model.

Table 2
Results of analysis of the measurement model

	DCE	CIDC	ACL	WE	PDO
Range of factor loadings	0.58-0.78	0.73-0.87	0.58-0.82	0.55-0.88	0.73-0.86
Composite reliability	0.833	0.910	0.869	0.89	0.913
Cronbach's alpha	0.749	0.875	0.809	0.849	0.885
Average variance extracted	0.502	0.669	0.573	0.582	0.636

In the evaluation of the measurement model, the values of Cronbach's alpha are in the range of 0.749 - 0.885 indicating that the model expresses an adequate internal consistency (Carmines & Zeller, 1979); as for the composite reliability, the values are between 0.833 - 0.913; this indicator is similar to Cronbach's alpha, but considers the interrelationships existing between the constructs that are extracted (Fornell & Larcker, 1981). On the other hand, the average extracted variance (EVA) is considered; it measures the variance captured by a construct in relation to the others in the model. The EVA value must be greater than 0.5 (Fornell & Larcker, 1981), a criterion that is met given that the resulting values fluctuate between 0.502 -

0.669. As for discriminant validity, it refers to the ability of an instrument to distinguish between two or more variables or concepts, determining the existence of significant correlations between variables (Hogan, 2004; Hair et al., 2010). Fornell & Larcker (1981) indicated that discriminant validity can be tested by comparing the square root value of the AVE with the correlation between variables; this means that discriminant validity will be given if the square root value of the AVE is greater than the correlation between variables (Zaiț & Bertea, 2011). Table 3 evidences that the square root value of the AVE on the diagonal, is greater than the existing correlation between each pair of latent constructs; ensuring discriminant validity.

Table 3
Correlations between items with the square roots of the average variances extracted (AVEs)

	DCE	CIDC	ACL	WE	PDO
DCE	**(0.709)**	0.724	0.613	0.528	0.587
CIDC	0.704	**(0.818)**	0.694	0.618	0.673
ACL	0.613	0.694	**(0.757)**	0.605	0.642
WE	0.528	0.618	0.605	**(0.763)**	0.711
PDO	0.587	0.673	0.642	0.711	**(0.797)**

Note: The values on the diagonal represent the square root of the AVE of each construct.

5.3 Analysis of the structural model

After the CFA (confirmatory factor analysis) in which all constructs were validated, the structural model is studied in order to examine the hypothesized relationships. According to Hair et al. (2017), the collinearity test measured by the Variance Inflation Factor (VIF), must be greater than 1 and less than 10 for each of the latent variables studied. Table 4 shows that the VIF value of the variables are less than 10, indicating that there is no collinearity in the research model.

Table 4
Variance Inflation Factor (VIF)

	DCE	CIDC	ACL	WE	PDO
Variance Inflation Factor (VIF)	2.249	2.953	2.263	3.055	3.530

On the other hand, Fig. 3 shows the structural model that presents standardized estimates, and considers the factor loadings, the R2 value for each construct and the standardized beta coefficients, relating each independent variable to the dependent variable and indicating the direction and level of effect.

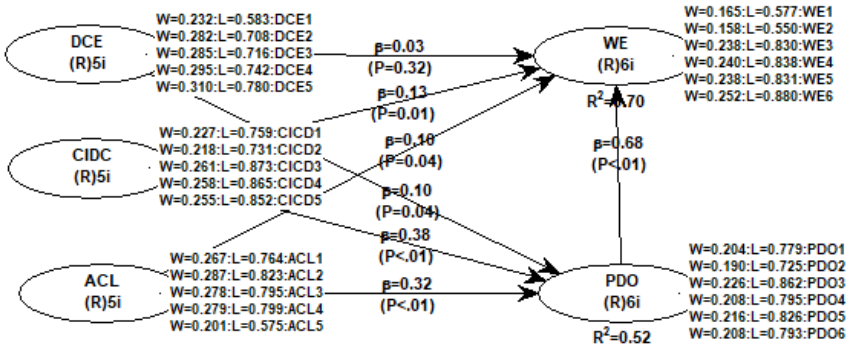

Fig. 3. Structural model with standardized values

Note: Values obtained with WarpPLS v. 8.0

Table 5 below summarizes the results of the evaluation of the structural model studied.

Table 5
Results of the structural model

Hypotheses	Path beta value	*p* value	Adopted Decision	Determination Coefficient (R2)	Predictive Relevance (Q2)
H1: DCE → WE	0.03	0.32	Reject	0.705	0.676
H3: CIDC → WE	0.13	0.01	Accepted		
H5: ACL → WE	0.1	0.04	Accepted		
H7: PDO → WE	0.68	0	Accepted		
H2: DCE → PDO	0.1	0.04	Accepted	0.524	0.527
H4: CIDC → PDO	0.38	0	Accepted		
H6: ACL → PDO	0.32	0	Accepted		

Based on the results shown in Table 5, the following is established: The R2 or Coefficient of Determination is the fraction of variation explained by an equation of the model under study (Thakkar, 2020). In the research, the value of 0.705 was obtained,

indicating a strong relationship between the work environment (WE) and its respective observed variables (DCE, CIDC, ACL, PDO). Similarly, a moderate relationship was found between Professional Development Opportunity (PDO) and its respective observed variables (DCE, ICDC, ACL), as the R2 value is 0.524. The R2 also indicates the predictive ability of the model; according to Hair et al. (2017) a high R2 value shows that the construct values can be predicted by the exposed trajectory model; in the detailed cases, high and medium predictive relationships are present respectively. Finally, the predictive relevance (Q2) is shown, which indicates the precision in the generation of the observed values and the model parameter estimates (beyond the sample). In this regard, Hair et al. (2017) indicate that results above 0.00 express that the model can predict future results. The obtained value of Q2 for the two studied relationships are 0.676 and 0.527 respectively, validating the predictive relevance.

5.4 Relationship between Digital Talent and Job Satisfaction

In order to determine the overall relationship between Digital Talent (DT) and Job Satisfaction (JS), it is necessary to know which are the most relevant sub-variables or dimensions in the model; therefore, a heat map has been generated (Figure 4), which shows the relationship between each pair of them.

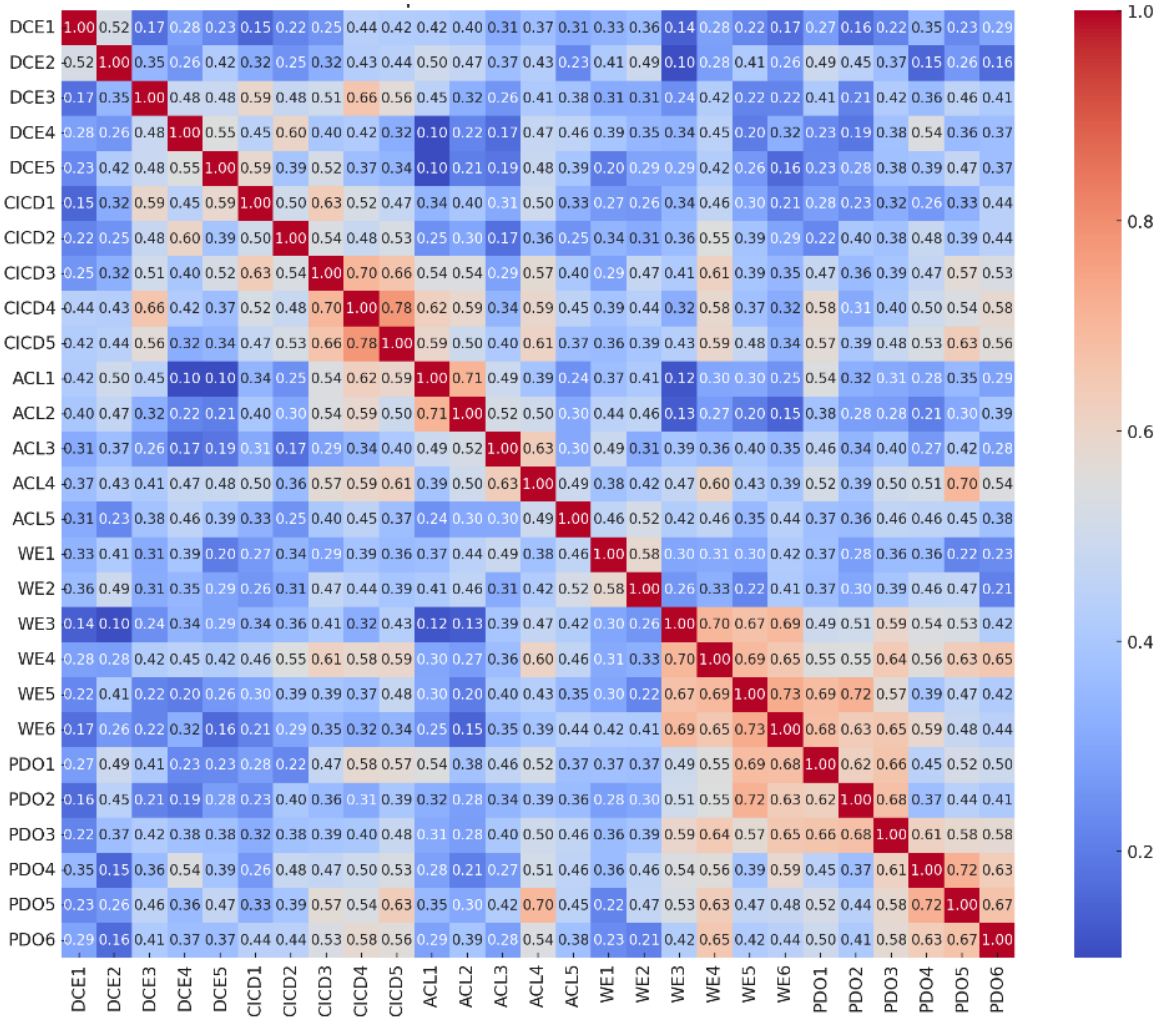

Fig. 4. Heatmap of the correlation matrix

The heat map of the correlation matrix reveals significant linear relationships between several dimensions of the independent variables, suggesting that they may be good predictors of the dependent variables,

After that, the variables related to Digital Talent (DCE2, DCE3, DCE4, DCE5, CICD1, CICD2, CICD3, CICD4, CICD5, ACL1, ACL2, ACL3, ACL4) and Job Satisfaction (WE3, WE4, WE5, WE6, PDO2, PDO4, PDO5, PDO6) have been selected from the data set; then taking the absolute values of the correlation matrix to focus on the strength of the correlation, regardless of its direction, allowing to understand the magnitude of the relationship between Digital Talent and Job Satisfaction.

The correlation between Digital Talent and Satisfaction has an average value of 0.366. This indicates that there is a moderate positive relationship between these two variables, suggesting that as the level of Digital Talent increases, Job Satisfaction also

tends to increase. Figure 5 provides insight into the impact of Digital Talent on employee Job Satisfaction and can guide decision making in areas such as talent development, skill requirements and job design.

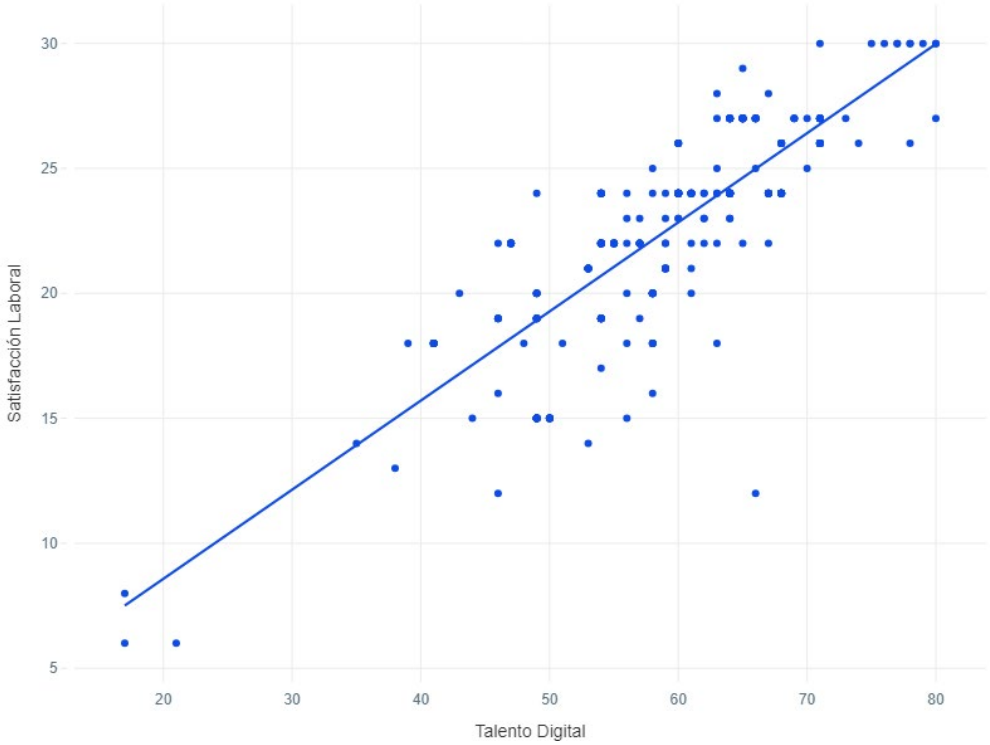

Fig. 5. Correlation between Digital Talent - Job Satisfaction

6. Discussion of Results

The findings indicate that employees' digital competencies (DCE) (even though in the research the hypothesis has been rejected) and digital innovativeness and creativity capability (DICC) have a significant impact on the work environment (WE). This suggests that employees with robust digital skills and innovativeness contribute to a more positive work environment. Adaptability and continuous learning (ACL) also significantly influence the work environment, underscoring the importance of flexibility and continuous development in the modern work environment (Tarafdar et al., 2014). In terms of professional development opportunities (PDO), both digital competencies and innovativeness show a significant influence, although less pronounced than in the work environment. This may be because professional development opportunities depend not only on individual skills, but also on organizational policies and institutional support (Ghani et al., 2023). Finally, the work environment shows a positive and significant relationship with professional development opportunities, indicating that a positive work environment facilitates employees' professional growth and development (Alessandri et al., 2014; Paitán et al., 2014).

7. Conclusions

This study demonstrates that digital talent is a crucial factor in improving job satisfaction, highlighting the need for organizations to invest in the development of digital competencies and foster a work environment conducive to innovation and continuous learning. These findings have practical implications for talent management and HR policy design in the digital age. The relationship between Digital Talent and Job Satisfaction is relevant in the context of a public university, due to the increasing digitization of educational and administrative processes (Secretariat of Governance and Digital Transformation of the PCM of Peru, 2023). The need to keep collaborators motivated and satisfied to improve the efficiency and quality of the educational service is as important as the need to foster a work environment that promotes innovation and continuous professional development. This theoretical model presented, allows a detailed exploration of how the digital competencies and adaptability of collaborators impact their job satisfaction, providing a solid foundation for future research and the implementation of effective policies in the management of digital talent in public institutions.

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