

# IMPACT OF DIGITAL LITERACY ON TURNOVER INTENTION AMONG SLOVENIAN HEALTHCARE PROFESSIONALS

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Digital literacy has become an essential competence in healthcare systems undergoing rapid digital transformation. As digital technologies and information systems become increasingly integrated into clinical practice, healthcare professionals must possess adequate digital competencies to perform their tasks effectively. At the same time, workforce stability remains a significant challenge for healthcare organisations, making turnover intention an important issue for healthcare management. This study examines the relationship between digital literacy and turnover intention among healthcare professionals working in Slovenian public healthcare organisations. A quantitative research design was employed, using a 5-point Likert-scale survey questionnaire to measure digital literacy and turnover intention. The final sample comprised 129 healthcare professionals employed by public healthcare organisations in Slovenia.

DOI

[https://doi.org/  
10.18690/um.fov.4.2026.29](https://doi.org/10.18690/um.fov.4.2026.29)

ISBN

978-961-299-152-4

## Keywords:

digital literacy,  
turnover intention,  
healthcare professionals,  
digital technology,  
public healthcare  
organisations



University of Maribor Press

## 1 Introduction

Public healthcare systems are increasingly undergoing digital transformation as digital technologies (DTs) and information systems become integrated into everyday clinical practice. Electronic health records, digital platforms, and interconnected health information systems are changing how healthcare organisations (HCOs) operate and deliver services. In this context, digital literacy (DL) has become an important competence for healthcare professionals (HCPs), enabling them to use DTs effectively and perform clinical and administrative tasks in digitalised work environments.

At the same time, public HCOs face persistent workforce challenges, including staff shortages and increasing turnover intention (TI) among HCPs. Understanding the factors that may influence employee retention has therefore become an important issue for public healthcare management. While previous research has focused mainly on organisational and work-related determinants of TI, the role of DL in this relationship remains less explored.

This study examines the relationship between DL and TI among HCPs working in Slovenian public HCOs. Using a preliminary quantitative research design based on survey data, the study investigates whether higher levels of DL are associated with lower TI. By addressing this relationship, the paper contributes to the broader discussion on digital transformation and workforce sustainability in public healthcare systems.

## 2 Slovenian public healthcare organisations

In the Slovenian context, public HCOs represent a structured and hierarchical system embedded within a publicly funded, state-regulated healthcare model, primarily governed by the Health Care and Health Insurance Act (*Zakon o Zdravstvenem Varstvu in Zdravstvenem Zavarovanju* (ZZVZZ) (PISRS), n.d.). The system operates on the principle of universal access, with the Health Insurance Institute of Slovenia acting as the central financier of public HCOs and their services (Domej, 2019). Individual public HCOs operate under the Ministry of Health's coordination and are required to comply with national standards on quality, safety, and accessibility.

In Slovenia, the public healthcare system is described by (*Zdravstveni Sistem v Sloveniji*, n.d.) includes two university medical centres, ten general hospitals, sixteen specialised hospitals, sixty-four community health centres, and five specialised national public health institutions: the Blood Transfusion Centre of Slovenia, the National Institute of Public Health, the National Laboratory of Health, Environment and Food, Slovenia Transplant, and the Youth Health and Climate Resort Rakitna. As those public HCOs represent a critical component of national infrastructure, the performance of HCPs and the execution of their work tasks must be carried out reliably and without errors, as the health and well-being of Slovenian citizens depend on the quality and continuity of these services.

To perform their work tasks effectively, HCPs must communicate, collaborate, and support one another. Effective communication facilitates the timely exchange of information and coordination of work processes within healthcare teams. Moreover, as a growing share of healthcare work relies on DTs, HCPs must possess at least basic DL to perform administrative and clinical tasks efficiently and ensure the accurate use of DTs

### 3 Digital literacy and turnover intention

DL constitutes an essential competence for working effectively in contemporary digitalised environments (Vodã et al., 2022). It is commonly defined as an individual's capacity to use DTs in a deliberate, critical and effective manner to access, evaluate, create and communicate information, and to participate responsibly in digital environments (Reddy et al., 2020). This competence is particularly important in public HCOs, which have increasingly undergone digital transformation through the integration of advanced information systems and digital solutions (Muhammad Saif ud Din, 2025).

Public HCOs are progressively implementing national and international digital information systems to enhance patient-centred care and improve the accessibility of healthcare services (Awad et al., 2021; Galazzi et al., 2025). At the EU level, digital transformation in healthcare is reflected in the development of eHealth, which refers to the structured use of DTs and data-driven solutions to support healthcare delivery, public health activities, health system governance, and cross-border health services (Carradinha et al., 2026). These initiatives aim to improve the accessibility,

quality, efficiency, and long-term sustainability of public healthcare systems across EU Member States (*Digital Health and Care - Public Health - European Commission*, 2025).

Slovenia is one of the EU Member States that has significantly advanced the implementation of DTs in healthcare over the past decade. Particularly after 2015, when the National Institute of Public Health assumed coordination of the national eHealth project, substantial progress was achieved (*eZdravje - eZdravje*, 2019). With financial support from the EU, several key digital solutions were introduced, including the national digital platform zVEM, which enables Slovenian citizens to access their personal health data online (*zVEM - eZdravje*, 2020), and the Central Registry of Patient Data (CRPD). The latter represents Slovenia's national electronic health data repository, which securely stores and integrates patients' medical records to enable authorised HCPs to access comprehensive clinical information across healthcare providers (*CRPD - eZdravje*, 2020). These systems contribute to improved interoperability, accessibility, and efficiency within the Slovenian public healthcare system.

The difference between zVEM and the CRPD lies primarily in their intended users and functional purposes. While zVEM is designed to enable patients to access and manage their personal health data, the CRPD is an integrated national clinical information system intended exclusively for authorised HCPs. It aggregates and stores structured medical documentation, such as discharge summaries, specialist reports, laboratory results, and imaging records, enabling HCPs to obtain a comprehensive overview of a patient's medical history across different public HCOs (*How Did Slovenia Modernise Its eHealth System?*, 2024). The effective use of the CRPD requires a sufficient level of DL, as HCPs must navigate complex digital interfaces, accurately interpret electronic health data, ensure data security, and integrate digital information into clinical decision-making.

For HCPs to attain and maintain an adequate level of DL, systematic training and continuous professional development must be ensured within HCOs (Shiri et al., 2023). In this context, human resource management (HRM) plays a pivotal role in designing, implementing, and evaluating structured educational programmes that enable HCPs to use information systems, such as the CRPD, effectively and responsibly.

By providing targeted training, ongoing support, and opportunities for skills development, HRM contributes to strengthening digital competence, professional confidence, and operational efficiency. When HCPs are adequately equipped to navigate digital information systems and other job-related DTs, and to integrate electronic health data into clinical practice, they are more likely to perform their duties effectively and experience lower levels of work-related strain. Such organisational support may, in turn, contribute to lower TI by enhancing digital competencies.

## 4 Methodology

This study employs a quantitative research design to examine whether a relationship exists between DL and TI among Slovenian HCPs. At the time of writing, data collection was still ongoing; however, 135 responses had already been collected. Six respondents reported employment in private HCOs and were therefore excluded from the analysis, as the study focuses exclusively on public HCOs. The final dataset thus included 129 completed questionnaires from HCPs working in public HCOs. Accordingly, the results presented in this paper should be interpreted as preliminary, and the scope of conclusions is limited to the current sample.

The survey consisted of a demographic section and a main section that measured DL and TI using a 5-point Likert scale. DL was assessed using a 10-item scale adapted from Ng (2012), which captures individuals' competencies in using DTs in a critical and effective manner. The scale is structured across three dimensions: technical, cognitive, and socio-emotional, reflecting the multifaceted nature of DL. TI was measured using a three-item scale adapted from Dalessio et al. (1986), employing Likert-type items that capture respondents' intention to leave their current HCO.

Demographic questions included respondents' age, gender, and total years of work experience in public HCOs.

The study addresses the following research question:

**RQ:** Is there a negative linear relationship between DL and TI among publicly employed HCPs?

This question assumes that DL may represent an important organisational competence that contributes to reducing TI, thereby informing future workforce retention strategies in public HCOs.

## 5 Results

This section presents the study's empirical findings. First, the demographic characteristics of the respondents are described, including gender, age, and work experience. This is followed by the analysis of the relationship between DL and TI among HCPs employed in Slovenian public HCOs.

The final sample consisted of 129 Slovenian HCPs employed in public HCOs. Most of them were women (N = 110; 85.3%), while men represented 19 respondents (14.7%) of the sample (Table 1)

**Table 1: Gender, work experience, age of HCPs**

| Gender     |       |           |         |               |                    |
|------------|-------|-----------|---------|---------------|--------------------|
|            |       | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid      | M     | 19        | 14,7    | 14,7          | 14,7               |
|            | W     | 110       | 85,3    | 85,3          | 100                |
|            | Total | 129       | 100     | 100           |                    |
| Work years |       |           |         |               |                    |
|            |       | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid      | 1-10  | 57        | 44,2    | 44,2          | 44,2               |
|            | 11-20 | 32        | 24,8    | 24,8          | 69                 |
|            | 21-30 | 20        | 15,5    | 15,5          | 84,5               |
|            | 31-40 | 18        | 14      | 14            | 98,4               |
|            | 41-45 | 2         | 1,6     | 1,6           | 100                |
|            | Total | 129       | 100     | 100           |                    |
| Age groups |       |           |         |               |                    |
|            |       | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid      | 20-30 | 33        | 25,6    | 25,6          | 25,6               |
|            | 31-40 | 47        | 36,4    | 36,4          | 62                 |
|            | 41-50 | 21        | 16,3    | 16,3          | 78,3               |
|            | 51-60 | 26        | 20,2    | 20,2          | 98,4               |
|            | 61-65 | 2         | 1,6     | 1,6           | 100                |
|            | Total | 129       | 100     | 100           |                    |

Source: own

About age distribution, most respondents were between 31 and 40 years old (N = 47). This group was followed by respondents aged 20–30 years (N = 33), 51–60 years (N = 26), 41–50 years (N = 21), and 61–65 years (N = 2).

Regarding work experience, the largest proportion of respondents had 1–10 years ( $N = 57$ ). This was followed by respondents with 11–20 years of experience ( $N = 32$ ), 21–30 years ( $N = 20$ ), 31–40 years ( $N = 18$ ), and 41–45 years ( $N = 2$ ).

The primary objective of the analysis was to examine whether a negative linear relationship exists between DL and TI among Slovenian HCPs. To test this relationship, the variables DL\_average and TI\_average were calculated as the mean item scores for each construct (Table 2).

A one-tailed Pearson correlation analysis was conducted to examine the linear relationship between the two variables. The hypotheses tested were:

$H_0$ : There is no linear relationship between DL and TI.

$H_1$ : There is a negative linear relationship between DL and TI.

**Table 2: Linear correlation analysis**

| Correlations |                     |            |            |
|--------------|---------------------|------------|------------|
|              |                     | DL_average | TI_average |
| DL_average   | Pearson Correlation | 1          | -0,031     |
|              | Sig. (1-tailed)     |            | 0,036      |
|              | N                   | 129        | 129        |
| TI_average   | Pearson Correlation | -0,031     | 1          |
|              | Sig. (1-tailed)     | 0,036      |            |
|              | N                   | 129        | 129        |

Source: own

The results in Table 2 indicate a weak negative correlation between DL and TI ( $r = -0.031$ ). Although the effect size is negligible, the relationship reached statistical significance ( $p = 0.036$ ). This suggests that the direction of the relationship is consistent with the theoretical expectation that higher levels of DL are associated with lower TI; however, the strength of the association is very limited within the current sample.

Accordingly, while the statistical test formally allows for the rejection of the null hypothesis ( $H_0$ ) in favour of  $H_1$ , this conclusion should be interpreted with caution. The negligible effect size indicates that the relationship has minimal practical or explanatory relevance. Therefore, the results provide only limited empirical support for the hypothesised relationship.

These findings are preliminary and based on a relatively small sample ( $N = 129$ ), as data collection was still ongoing at the time of analysis. The limited sample size may have affected the stability of the estimates and attenuated the observed effect. It is therefore plausible that the relationship between DL and TI may be more pronounced in larger and more representative samples.

## 6 Discussion

This study examined the relationship between DL and TI among HCPs working in Slovenian public HCOs. As healthcare systems increasingly undergo digital transformation, the ability of HCPs to use DTs effectively represents an important professional competence (Ferreira & Magalhães, 2026). The findings of this study contribute to the ongoing discussion on how digital competencies, particularly DL, may influence workforce stability within healthcare systems (Levin-Zamir, 2023).

The empirical results indicate a negative relationship between DL and TI, which is consistent with the theoretical assumption that higher levels of digital competence are associated with lower TI. Although the observed effect size is negligible ( $r = -0.031$ ), the relationship was statistically significant ( $p < 0.05$ ). This suggests that the direction of the relationship aligns with theoretical expectations, even though the association's strength remains limited in the current sample.

It is important to emphasise that these findings are preliminary and based on a relatively small sample ( $N = 129$ ), as data collection was still ongoing at the time of analysis. The limited sample size may have influenced the stability of the estimates and attenuated the observed effect size. It is therefore plausible that the relationship between DL and TI may be more pronounced in larger and more representative samples. Future studies are needed to validate and further examine this relationship under more robust empirical conditions.

Importantly, the findings indicate that DL should not be interpreted as a strong standalone predictor of TI. Rather, DL appears to function as an enabling competence that may exert its influence indirectly through other organisational and psychological mechanisms. In line with contemporary organisational research, it is likely that DL contributes to workforce stability through mediating variables such as job satisfaction, perceived organisational support, work-related stress, or employee

engagement. This highlights the need to conceptualise DL within more complex explanatory frameworks rather than as an isolated determinant.

Despite the modest effect size, the study reinforces the strategic relevance of DL in digitally transforming healthcare environments. As DTs become increasingly integrated into clinical practice, HCPs must possess adequate digital competencies to perform their work effectively and confidently. Organisational practices that support the development of DL, such as structured training programmes, continuous professional development, and supportive HRM policies, may therefore contribute to improved employee retention.

The findings offer a valuable foundation for future research and emphasise the importance of strengthening DL as part of broader strategies to ensure the long-term sustainability and resilience of public HCOs in Slovenia and other EU Member States with similar public healthcare systems.

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