

## **Job satisfaction of higher education teachers in the context of education digitalization**

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**Doi: 10.2478/gssfj-2025-0001**

### **Abstract**

*The article examines job satisfaction among higher education teachers amid digitalization. It analyzes theoretical approaches from international, Russian, and Kazakhstani researchers, including Herzberg's Two-Factor Theory, Deci and Ryan's Self-Determination Theory, Maslach's Burnout Theory, and Kazakhstan's research on pedagogical motivation and professional identity.*

*To quantitatively assess job satisfaction among university teachers under digitalization conditions, the Minnesota Satisfaction Questionnaire was used. This tool allows the determination of both general and specific levels of professional satisfaction, based on a wide range of parameters, including working conditions, opportunities for career development, interaction with administration and colleagues, and the degree of autonomy and recognition. The use of this questionnaire is justified by its high validity and reliability, as well as its international recognition as one of the most valid methods for assessing employees' subjective attitudes toward their professional activities.*

*Given the study's specific focus on digitalization, the questionnaire was adapted to better reflect the current professional environment. This adaptation preserved its diagnostic accuracy and enabled broader analysis, allowing job satisfaction to be correlated with respondents' age and their ICT competence level. This made it possible to identify correlations between digital factors and teachers' psychological well-being and to clarify how organizational and technological factors affect teachers' perceptions of their work. The findings show that ICT competence is positively associated with job satisfaction (mean = 4.3), while increased workload and insufficient institutional support are key sources of dissatisfaction.*

*The authors emphasize the need to improve ICT skills, create mentoring programs, and prevent emotional burnout among teachers. The conclusions show that job satisfaction depends on many factors and offer recommendations to improve teachers' well-being in a digital environment.*

**Keywords: job satisfaction, higher education, education digitalization, ICT competence, ICT skills.**

## 1. Introduction

As digital technology spreads rapidly in society, higher education is also changing significantly. The use of information and communication technologies (ICT), online learning, digital platforms, and electronic resources means teachers need not only high professional skills, but also the ability to adapt to changing conditions.

These changes affect how teaching is structured, organized, and delivered, making job satisfaction a key topic for university teachers. Job satisfaction is now an important measure of how well the educational process works, how good educational services are, and teachers' psychological well-being. In digital learning environments, teachers must frequently update their skills, adapt to new formats, and meet increased technological and organizational demands.

Many studies have examined job satisfaction both internationally and locally, but the impact of digital education on teachers' job satisfaction in Kazakhstan remains under-researched. This is complex because job satisfaction depends on many factors, such as digital skills, organizational support, changes in workload, and individual teacher traits.

The goal of this study is to identify what factors affect job satisfaction among higher education teachers during digital changes in education. The study examines ICT competence, age, university support, and the risk of burnout from digital workloads. Several studies suggest a link between good ICT use and higher job satisfaction, showing technology can help make teaching more enjoyable and productive (Lubbadeh T, 2020).

Herzberg's Two-Factor Theory (1959) distinguishes between hygiene factors (such as salary, working conditions, and institutional policies) and motivating factors (including recognition, professional development, and achievement). Within this system, digitalization may function as a motivating factor when it enhances pedagogical innovation and supports teacher autonomy.

Self-Determination Theory by Deci and Ryan (2000) says people have three key needs: autonomy, competence, and connection with others. In digital education, technology can help meet these needs by enabling flexible, creative teaching. However, if digitalization adds stress and reduces real professional interaction, it can also hurt these needs.

Maslach's Burnout Theory (1981) warns of the risk of emotional exhaustion from high job demands. More digital teaching and longer online work hours can increase workload, potentially leading to lower motivation and greater emotional fatigue among teachers.

Along with international theories, some post-Soviet scholars offer useful insights into teacher satisfaction. V.A. Slastenin and I.F. Isaev emphasize the importance of

developing a strong professional identity, suggesting that the digital environment should help teachers realize their potential rather than cause stress. E.I. Rogov identifies the gap between expectations and real working conditions as a main reason for dissatisfaction. V.V. Rubtsov notes that soft skills and digital adaptability are more important for teachers during educational changes, and O.A. Karabanova highlights the value of emotional strength and psychological support from academic institutions.

Kazakhstani researchers have also explored teacher satisfaction in digital settings. A.A. Baimuratova links satisfaction to university support, including help with teaching methods, clear policies, and respect for academic freedom. S.Zh. Zhumabayev notes the importance of teachers' digital skills, their role in digital planning, and recognition of digital work. M.K. Ashimov highlights that chances for digital self-development and academic exchanges can boost teacher satisfaction.

## **2. Theoretical Background**

Job satisfaction among university teachers is influenced by personal, organizational, and broader factors. In academic environments, teachers' satisfaction depends on their feelings about their job roles, work conditions, and growth opportunities. Theoretical models like Herzberg's Two-Factor Theory (Herzberg, 1959), Self-Determination Theory (Deci & Ryan, 2000), and Maslach's Burnout Theory (Maslach & Jackson, 1981) help analyze these issues. Herzberg's model says satisfaction comes from both basic needs (such as pay and work conditions) and motivating factors (such as achievement and recognition) (Herzberg, 1966). Digital changes in education further connect these factors. Studies show that ICT can serve as a motivator by providing teachers with greater independence and growth opportunities (Mansourian et al., 2019). Self-Determination Theory suggests people are most motivated when they feel independent, skilled, and connected, and research finds that ICT can help teachers feel this way (Lillelien et al., 2025). Using technology in teaching can increase teachers' sense of ownership of teaching methods, enhance teamwork, and increase satisfaction (Fransson et al., 2018; Yerdelen-Damar et al., 2017). On the other hand, Maslach's theory suggests that excessive use of digital tools can lead to stress and burnout when demands are high (Cacciamani et al., 2022; Song et al., 2022; Castellacci & Viñas-Bardolet, 2019; Sahito & Vaisanen, 2017).

One of the most significant factors influencing job satisfaction in digitally transformed learning settings is teachers' digital competence, particularly their ability to effectively use information and communication technologies (ICT) in teaching and learning processes. The increasing integration of digital platforms, online learning systems, and educational technologies requires teachers to continuously develop new technological and pedagogical skills. The Technological Pedagogical Content Knowledge (TPACK) framework stresses that effective technology integration in education depends on the

interaction among technological knowledge, pedagogical knowledge, and disciplinary expertise (Mishra & Koehler, 2006). When teachers have high levels of ICT competence, they are more likely to successfully integrate digital tools into their educational approaches, which can increase their sense of professional efficacy and job satisfaction. Conversely, insufficient digital skills may lead to frustration, stress, and reduced professional confidence.

Another important factor affecting teachers' job satisfaction is organizational support, particularly in the context of digital transformation. Institutional policies, leadership practices, and the availability of technological resources play a critical role in directing teachers' experiences with digitalization. Research suggests that supportive institutional environments characterized by access to training programs, adequate technical infrastructure, and collaborative professional networks considerably improve teachers' ability to adapt to digital teaching environments (Tao et al., 2006). In contrast, insufficient institutional support may increase teachers' workload and negatively affect their motivation and professional satisfaction. Digital leadership, which promotes innovation, professional development, and collaboration among faculty members, has been identified as an important factor in facilitating teachers' adaptation to digital technologies and enhancing job satisfaction.

In addition to institutional factors, age and career stage may also influence teachers' adaptation to digital transformation and their perceptions of job satisfaction. Studies suggest that teachers at different career stages demonstrate varying levels of technological adaptation and professional satisfaction. Mid-career teachers often combine substantial professional experience with a relatively high capacity to adapt to technological innovations, whereas older teachers may face greater challenges in acquiring new digital competencies. At the same time, younger teachers may experience lower levels of job satisfaction due to limited professional experience or career instability. Therefore, examining the relationship between age and job satisfaction can provide important insights into generational differences in adapting to digitally mediated teaching environments.

A further critical aspect influencing job satisfaction in digitally transformed educational contexts is emotional burnout. The increasing demands of digital teaching, including developing digital learning materials, managing online communication with students, and continuously updating technological skills, may contribute to increased workload and emotional stress among teachers. Maslach's Burnout Theory identifies emotional exhaustion, depersonalization, and reduced professional accomplishment as key components of professional burnout (Maslach, 1981). In digital learning environments, prolonged engagement with online teaching platforms and the constant need to respond

to technological changes may intensify these risks. When teachers experience high levels of burnout, their job satisfaction and professional engagement tend to decline.

Taken together, the literature indicates that job satisfaction among higher education teachers in the context of digital transformation is shaped by the interaction of multiple factors. ICT competence influences teachers' ability to successfully integrate digital technologies into their teaching practices; organizational support determines the extent to which institutions facilitate teachers' adaptation to digital environments; age-related factors reflect differences in experience and technological adaptation across career stages; and burnout risks highlight the psychological challenges associated with increased digital workloads. Understanding the relationships among these variables is essential for developing effective institutional strategies to support teachers during the ongoing digital transformation of higher education.

### **3. Methodology**

The study adopted a purposive non-probability sampling strategy to recruit participants with relevant professional experience in digitally mediated teaching environments. The final sample consisted of 153 university teachers from five higher education institutions in Kazakhstan. Participants were selected based on the following inclusion criteria: (1) current employment as a higher education teacher, and (2) active involvement in teaching activities that require the use of digital technologies, including online learning platforms, digital communication devices, or electronic educational resources.

Participants were recruited through institutional mailing lists, internal university communication channels, and professional academic networks, ensuring access to teachers with varying levels of experience in digital teaching (Stanton & Rogelberg, 2001; Van Quaquebeke et al., 2022). This approach enabled the study to include respondents from diverse academic disciplines, age groups, and levels of digital competence, thereby allowing a more comprehensive examination of job satisfaction in the context of educational digital transformation.

Although the sampling strategy does not allow for full statistical generalization to the entire population of university teachers in Kazakhstan, it is appropriate for exploratory research aimed at exploring patterns and relationships among digital competence, organizational support, and job satisfaction. Moreover, including participants from multiple universities helps reduce the risk of institutional bias and enhances the diversity of perspectives represented in the dataset.

Participation in the study was voluntary and anonymous, and respondents were informed of the research's purpose and the confidentiality of their responses prior to completing the questionnaire.

To assess teachers' job satisfaction, the Minnesota Satisfaction Questionnaire (MSQ) was employed. This widely used instrument measures both intrinsic and extrinsic dimensions of professional satisfaction using a Likert-type scale. The MSQ provides a reliable framework for evaluating teachers' perceptions of their professional activities, working conditions, and organizational environment (Ghazi et al 2011; Toker, 2011).

In addition to the quantitative survey, qualitative methods were used to gain deeper insights into the impact of digital transformation on academic work. Specifically, semi-structured interviews and focus group discussions were conducted with a subset of participants. These qualitative methods helped identify teachers' perceptions of digitalization, the challenges they face when adapting to digital technologies, and the factors influencing their professional satisfaction.

Two key variables were analyzed in this study:

- Age of participants, which allowed the examination of generational differences in adapting to digital learning environments.
- Level of digital literacy (ICT competence), which reflects teachers' ability to effectively use digital technologies in teaching, communication, and academic activities.

The age distribution of participants is presented in Table 1.

*Table 1. Age distribution of participants and job satisfaction*

	<b>N</b>	<b>%</b>
<b>25–35 years</b>	<i>41</i>	<i>26.8%</i>
<b>36–50 years</b>	<i>64</i>	<i>41.8%</i>
<b>51–65 years</b>	<i>48</i>	<i>31.4%</i>

Table 1 shows that the largest group of respondents (41.8%) belongs to the 36–50 age group, followed by teachers aged 51–65 years (31.4%), while younger teachers aged 25–35 years represent 26.8% of the sample.

The analysis of job satisfaction (Table 2) levels across age groups revealed that the highest level of job satisfaction (average score 4.1) was observed among teachers aged 36–50 years, whereas lower levels were reported among younger and older teachers.

Table 2. Job satisfaction level by age group (scale 1–5)

	<b>Job Satisfaction</b>
<b>25–35 years</b>	3.7
<b>36–50 years</b>	4.1
<b>51–65 years</b>	3.5

Furthermore, the relationship between ICT competence and job satisfaction was examined (Table 3). The results indicate that teachers with high digital competence demonstrate significantly higher levels of job satisfaction (4.3) than those with medium (3.8) or low (3.1) levels of ICT competence.

Table 3. ICT skills level and job satisfaction

<b>ICT skills level</b>	<b>Job Satisfaction</b>
<b>High</b>	4.3
<b>Medium</b>	3.8
<b>Low</b>	3.1

Finally, respondents were asked to identify the most important factors influencing their job satisfaction in the context of digital transformation in higher education (Table 4). The results show that flexible work schedules enabled by online teaching (81%), increased workload during digital teaching (76%), and insufficient technical support (62%) were among the most frequently mentioned factors affecting teachers' professional satisfaction.

Table 4. Factors influencing job satisfaction under digitalization conditions

	%
<b>Flexible work schedule (online work)</b>	81%
<b>Increased workload during online teaching</b>	76%
<b>Insufficient technical support</b>	62%
<b>Opportunities for digital self-development</b>	58%
<b>Feeling of isolation, reduced live communication</b>	43%

#### 4. Discussion

The results of this study provide important insights into the relationship between educational digitalization and teachers' job satisfaction in higher education in Kazakhstan. The findings indicate that teachers aged 36–50 report the highest levels of job satisfaction, while both younger and older groups demonstrate comparatively lower satisfaction levels. This pattern suggests that mid-career teachers may benefit from a combination of professional experience and sufficient adaptability to digital technologies, enabling them to better manage the demands of digital transformation.

A key finding of the study is the positive relationship between ICT competence and job satisfaction. Teachers with higher levels of digital literacy reported significantly higher satisfaction compared to those with lower ICT competence. This result supports the assumptions of Self-Determination Theory, particularly the role of competence in enhancing motivation and well-being. In digitally mediated environments, the ability to effectively use technology appears to reinforce teachers' sense of professional efficacy and autonomy.

These findings are consistent with previous studies indicating that ICT competence enhances job performance, reduces work-related difficulties, and contributes to a more supportive digital working environment (Sahito et al., 2017; Mirfan et al., 2018). However, the results also align with more recent research highlighting the dual nature of digitalization, where increased technological demands may lead to technostress and reduced job satisfaction if not properly managed (Morandini et al., 2023).

In addition to ICT competence, the study identifies several key challenges associated with digital transformation, including increased workload, insufficient technical support, and the risk of emotional burnout. These findings align closely with Maslach's Burnout Theory, which emphasizes that excessive demands combined with limited organizational support can lead to emotional exhaustion and reduced engagement. In higher education, the transition to digital teaching requires additional time for course

preparation, technological adaptation, and online communication, thereby significantly increasing cognitive and emotional demands.

The results also demonstrate that organizational support plays a critical role in shaping teachers' job satisfaction. Institutions that provide adequate technical infrastructure, professional training, and methodological support facilitate teachers' adaptation to digital environments and contribute to higher levels of satisfaction. Conversely, insufficient institutional support exacerbates stress and reduces motivation. This finding highlights the importance of aligning digital transformation strategies with teachers' professional needs.

Job satisfaction is closely linked to faculty autonomy in the digital environment; educators who feel empowered to utilize technology creatively tend to report higher levels of engagement and fulfilment in their roles, as shown in our data.

Conversely, those facing institutional constraints may experience diminished job satisfaction and a sense of alienation from their pedagogical mission (Tsankov et al., 2019; Teräs et al., 2022; Fetherston et al., 2021)

From a broader perspective, the findings suggest that digitalization influences job satisfaction through a combination of individual and organizational factors. While ICT competence enhances teachers' confidence and effectiveness, its positive impact depends on supportive institutional conditions and manageable workloads. This confirms that digital transformation in education is not only a technological process but also a socio-organizational change that requires systemic support.

The study also has several limitations. First, the use of self-reported data may introduce subjective bias. Second, the focus on Kazakhstan limits the generalizability of the findings to other educational contexts. Third, the cross-sectional design does not allow for causal inference. Future research could address these limitations by employing longitudinal designs and comparative cross-country analyses.

From a practical perspective, the findings suggest that higher education institutions should adopt a comprehensive approach to improving teachers' job satisfaction in digital environments. This includes enhancing digital competencies through continuous professional development, implementing mentoring and knowledge-sharing initiatives, providing psychological support to prevent burnout, and ensuring balanced workload distribution. Such measures are essential for fostering a sustainable and supportive digital educational environment.

Overall, the study confirms that digital transformation in higher education presents both opportunities and challenges. While digital technologies can enhance teaching practices and professional autonomy, their successful implementation depends on the effective interaction between ICT competence, organizational support, and workload management. A balanced and systemic approach is therefore necessary to ensure both teacher well-being and the long-term effectiveness of digital education.

## 5. Conclusion

Job satisfaction among teachers in the context of digitalization is a complex, multifactorial process that hinges on various personal, organizational, and technological factors. According to recent research, integrating digital technologies into learning environments influences not only how teachers operate but also their overall job satisfaction (Lyu & Luo, 2024). For instance, teachers with high digital literacy often report increased confidence and job satisfaction because they can effectively use technology to enhance their teaching practices. Conversely, those lacking sufficient training may feel overwhelmed, leading to frustration and decreased job satisfaction (Mansourian et al., 2019). Moreover, organizational support systems play a critical role in this dynamic. Comprehensive support measures are essential for a successful transition to digital education. These measures should include improving digital literacy through targeted professional development programs, which have been shown to increase teachers' technological proficiency and confidence (Coral & Bernuy, 2022). Additionally, providing psychological support is crucial, as the stress of adapting to digital platforms can significantly affect teachers' morale and job satisfaction (Xiong, 2022). Research indicates that teachers who receive mental health support are more resilient and better equipped to overcome the challenges of digitalization (Buda & Kovács, 2024). Furthermore, adapting working conditions to accommodate the new demands of digital education is vital. Flexible scheduling, access to necessary technological resources, and a supportive work environment contribute significantly to teachers' job satisfaction. Schools that foster a culture of cooperation and provide platforms for sharing best practices often see improved job satisfaction among their teachers. As the education system continues to evolve through digital transformation, it is imperative that educational institutions recognize the interdependence of these factors. Ensuring that teachers feel supported through continuous professional development, mental health resources, and adaptable work environments can lead to increased job satisfaction and, ultimately, better educational outcomes for students. The transition to digital education is not merely a technological shift; it requires a holistic approach that focuses on teacher well-being and professional growth, as highlighted by recent studies (Silva, 2023). In summary, a subtle understanding of the multi-layered influences on teacher job satisfaction is essential for realizing the full potential of digital education transformation.

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