Human capital and job satisfaction in transition economies: a comparative analysis of Hungary and Moldova

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Summary

Based on survey data, collected in 2021, from 266 respondents (171 from Hungary and 95 from Moldova), this research utilizes statistical methods, including the Mann-Whitney U test, Kruskal-Wallis test, and Dunn-Bonferroni post hoc analysis, to examine variations across countries, generations, sectors, and organizational sizes.

The results show no significant differences between Hungary and Moldova in the three human capital dimensions - Knowledge, Skills, and Competency - or job satisfaction, indicating the universal relevance of these factors across diverse socio-economic contexts. However, in Moldova, generational differences were observed in Competency levels, with Generation Z scoring lower than older cohorts, while no generational differences were found in Hungary. Sectoral analysis revealed higher job satisfaction among private-sector employees in Hungary compared to the public sector, whereas no such differences were evident in Moldova.

Organizational size emerged as a significant factor influencing both human capital dimensions and job satisfaction in both countries. Micro-sized organizations reported the lowest scores, particularly in Moldova, while large organizations in Hungary showed higher levels of satisfaction, driven by better pay, benefits, and working conditions.

The study underscores the importance of targeted interventions, such as skills development programs, reforms in the public sector, and tailored support for micro-sized organizations, to enhance employee satisfaction and optimize human capital utilization. These findings offer valuable insights into the relationship between human capital and job satisfaction in transition economies, providing actionable recommendations for policymakers and organizational leaders.

Keywords: human capital, job satisfaction, knowledge, skills, competence

JEL Code: J24

Introduction

The post-Soviet transitions of Hungary and Moldova have significantly shaped their economic structures, with each country undergoing unique challenges and opportunities. Hungary, with a more advanced path towards market liberalization by the early 1990s, had already enacted major reforms, including price liberalization and modernization of its tax system. However, it faced mounting external debt by the late 1980s, limiting further economic growth. Moldova, on the other hand, began its transition later, in 1992, amidst severe inflation and economic instability. The country's struggles culminated in widespread migration, as many citizens sought better opportunities abroad. Despite their different trajectories, both nations share a common challenge: the need to harness their human capital for sustainable economic growth. The term "human capital" refers to the skills, knowledge, and competencies that individuals acquire, which are crucial for fostering productivity and economic competitiveness. Table 1 presents a few main definitions of this term.

Table 1. Main definitions of Human Capital

Definition	Source
"We may define personal wealth so as to include all those energies, faculties, and habits which directly contribute to making people industrially efficient" (1948, p. 58).	Alfred Marshall (as cited in Sweetland, 1996, p. 344)
"… the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being" (OECD, 2009)	The definition is given by the OECD in the book called Human Capital (2009)
"… the skills the labour force possesses and is regarded as a resource or asset" (as cited in Diebolt and Haupert, 2019, p. 148)	From Oxford English Dictionary (as cited in Diebolt − Haupert, 2019, p. 148)
"… activities that influence future monetary and psychic income by increasing the resources in people" (Becker, 1993, p. 11)	Definition from Becker's book called "Human Capital − A Theoretical and Empirical Analysis, with Special Reference to Education

Source: authors' editing, 2024.

As economies progress and technology advances, human capital has become increasingly vital for both organizational success and national development. This evolution underscores the importance of analysing human capital's influence on job satisfaction—a factor integral to employee retention, productivity, and economic stability. Job satisfaction, in turn, is deeply influenced by the alignment between workplace factors and employees' expectations, as noted by Locke (1976), who emphasized that employees' values play a key role in shaping their satisfaction levels.

This study focuses on three critical dimensions of human capital: knowledge, skills, and competencies, and their influence on job satisfaction within Hungary and Moldova. By examining how these factors interplay in both countries, this research aims to shed light on how effective human resource strategies can foster higher levels of job satisfaction, ultimately contributing to national economic growth. Given the generational shifts in the workforce, especially with younger cohorts replacing older ones, the study also explores how these dynamics affect job satisfaction across age groups.

The importance of human capital in shaping the future economic landscape of these countries cannot be overstated. As noted by Becker (1993), investments in education and training are key to increasing the productivity and economic competitiveness of a nation.

General background

Hungary and Moldova represent two economies with distinct trajectories in terms of development, resources, and external dependencies. Hungary, with a GDP of approximately 180 billion and a GDP per capita of around 20,000 dollars (World Bank, 2022), has successfully leveraged its integration into the European Union to diversify its economy. Hungary's strengths lie in manufacturing and exports, with significant contributions from the automotive and electronics sectors. The country's economic resilience is supported by strategic investments, productivity growth, and EU funding, which have facilitated its modernization and integration into global supply chains. In contrast, Moldova remains one of the poorest countries in Europe, with a GDP of 16.5 billion and a GDP

per capita of 6,600 (World Bank, 2022). Moldova's economy is heavily reliant on agriculture and remittances, which make up a significant portion of household income. The country's structural challenges include low labour force participation, limited industrial capacity, and a high dependency on energy imports (World Bank, 2024). According to the National Bureau of Statistics of Moldova and OECD reports, Moldova faces significant vulnerabilities due to external shocks, such as the energy crisis exacerbated by the war in Ukraine. These challenges are further compounded by climate risks affecting its agriculture-dependent economy. While Hungary benefits from its EU membership, enabling it to attract substantial foreign investment and drive economic competitiveness, Moldova remains in the early stages of reform, focusing on EU accession and overcoming structural obstacles. World Bank (2021) reports highlight the need for Moldova to focus on long-term growth through investments in human capital, green energy, and governance reforms. On the other hand, Hungary, as noted by the Hungarian Central Statistical Office and World Economic Forum, continues to enhance its competitive edge through digital transformation and innovation-driven growth, especially in high-value industries like information services. Both countries share the need to improve human capital as a driver for sustained economic growth. For Moldova, the challenge lies in overcoming its high dependence on agriculture and remittances, while Hungary continues to invest in sectors that foster technological advancement and skill development.

Both Hungary and Moldova face critical challenges and opportunities in leveraging human capital for sustainable economic development. As they navigate distinct economic paths, the role of human capital—encompassing knowledge, skills, and competencies—becomes increasingly crucial in enhancing productivity and overall economic stability. Contemporary studies emphasize that job satisfaction is intricately linked to human capital development, particularly through the dimensions of knowledge, skills, and competencies. Building on this idea, Kiera and Shantz's (2022) study provides particularly compelling evidence for the role of skills in job satisfaction. Their research underscores that skills, as a key dimension of human capital, play a crucial role in job satisfaction by enhancing employees' capabilities to meet evolving job demands, thereby boosting retention and overall productivity. Investing in skill development is thus essential for organizations aiming to foster a satisfied and committed workforce. This is especially pertinent in Hungary and Moldova, where economic resilience may hinge on employees' ability to adapt to technological advancements and evolving market demands.

Competency, as a critical dimension of human capital, plays a fundamental role in influencing job satisfaction and employee retention. According to Liu et al. (2024), when employees possess high levels of competency relevant to their roles, they are more likely to experience job satisfaction, which stems from feeling competent, capable, and effective in their tasks. This alignment between skills and job requirements not only enhances their productivity but also contributes to a sense of accomplishment and value within the organization. Thus, fostering competency through targeted skill development not only increases job satisfaction but also strengthens the organization's ability to retain talent, as employees with high levels of competency perceive themselves as integral contributors to their workplace. Moreover, in this research, knowledge is examined as an integral part of human capital which includes the skills, expertise, and accumulated learning that employees bring to their roles. This dimension is critical, especially in professional fields where competency and up-to-date knowledge directly influence both individual performance and organizational outcomes. Knowledge empowers employees to perform their tasks with confidence and effectiveness, aligning closely with job satisfaction and a sense of personal accomplishment. A study by Baoren et al. (2024), confirms the importance of knowledge in enhancing job satisfaction. The findings suggest that medical staff with high levels of knowledge and continuous access to education experience greater job satisfaction. This is largely due to the increased competence and self-efficacy that

come from being well-prepared and capable in their roles. Knowledgeable employees are less likely to experience burnout and more likely to stay committed to their organizations.

The implications of these findings are substantial for both Hungary and Moldova. Hungary's economic strategy emphasizes advanced digital transformation, as outlined in the National Digitalisation Strategy 2022-2030, aiming to foster a modern and competitive economy by integrating digital solutions into all sectors (Hungary's National Digitalisation Strategy, 2022). In contrast, Moldova focuses on building foundational skills, recognizing that human capital development is crucial for economic and social progress. (European Training Foundation, 2020) Both countries share a common goal: fostering job satisfaction through targeted human capital investments. By addressing the evolving needs of a diverse workforce, organizations in both nations can enhance employee satisfaction and retention, thereby strengthening their respective economies.

These insights underscore that job satisfaction today relies on a balanced approach to human capital—one that values formal knowledge but prioritizes continuous skills development and competency building. As both countries continue to prioritize economic stability and growth, aligning human capital strategies with employee satisfaction could be key to achieving long-term competitiveness.

Material and methods

This study employed a mixed-methods approach, utilizing both qualitative and quantitative research methodologies. Surveys were conducted to gather data from employees across diverse industries (Table 3), allowing for a comprehensive understanding of the topic. Statistical analysis and systematic literature review were employed to interpret the data and draw meaningful insights. The quantitative analysis involved 95 respondents from Moldova and 171 from Hungary (Table 2) and consisted of 35 questions on the Likert scale and by these means. The collected data was analysed using IBM SPSS Statistics Version 27, and the following tests and analyses were conducted.

Confirmatory Factor Analysis (CFA) was conducted to evaluate the validity of the measured constructs, specifically the three dimensions of human capital and job satisfaction. In Confirmatory Factor Analysis (CFA), factor loadings represent the strength of the relationship between observed variables and their underlying latent constructs. A higher threshold of 0.6 or higher is often recommended for well-established instruments (Floyd & Widaman1995, Hair et al. 1998). The Confirmatory Factor Analysis (CFA) was conducted using SmartPLS 4 software.

The internal consistency of the constructs, reflecting the degree of correlation among items on a scale, was evaluated using Cronbach's alpha. Reliability is a critical consideration when conducting questionnaire-based research. Cronbach's alpha is widely recognized as a standard measure of reliability in marketing and social sciences. Constructs are considered reliable if Cronbach's alpha exceeds 0.7 or 0.8 (Field, 2013; Hair et al., 2013), and in some cases, a threshold of 0.6 is also deemed acceptable (Hair et al., 2014).

The results of the One-Sample Kolmogorov-Smirnov test (p < 0.05 for most groups) indicate that the distribution of the values for the examined scales (constructs and dimensions) deviates from normal in both Moldova and Hungary. Consequently, the Mann-Whitney nonparametric test was selected to determine significant differences between the two countries.

The Kruskal-Wallis test was used to evaluate differences in the values of Knowledge, Skills, Competencies, and Job Satisfaction across generations within each of the studied countries. This nonparametric test assesses differences among three or more independent groups on a continuous variable that does not adhere to a normal distribution. Following a significant Kruskal-Wallis test,

the Dunn-Bonferroni post hoc test was applied to identify the specific groups with significant differences.

Table 2 The Demographic Profile of the Respondents from Moldova and Hungary

Demographic variables		Republic of Moldova		Hungary	
		N = 95		N = 171	
Age of respondent	less than 25 years old (Z)	16	16.8	28	16.4
	26-35 years old (Y)	39	41.1	88	51.5
	36-45 years old (YX)	24	25.3	42	24.6
	above 45 years old (X or Baby boomers)	16	16.9	13	7.6
Gender of respond-ent	Female	51	53.7	115	67.3
	Male	44	46.3	56	32.7
Qualification of re-spondent	High school or less	25	26.3	61	35.7
	Diploma	50	52.6	92	53.8
	Postgraduate	20	21.1	18	10.5

Source: own editing based on the questionnaire survey

The most actively involved in research were representatives of the 26-35 age cohort, interestingly, from both studied countries (41.1% from Moldova and 51.5% from Hungary). Moreover, specifically for both countries, females were slightly more active in participation of the research. Additionally, for both countries, the most active respondents were highly qualified individuals with undergraduate or postgraduate degree which are either in first-level manager, supervisor, front-line manager or not in a supervisory position, facts which might influence the result of the analysis. Furthermore, a significant percentage of respondents, at the moment of sample collection, were in their job position for 1 to 10 years (Table 3).

Table 3 Professional profile of the respondents of Moldova and Hungary

Professional profile of the respondents		Republic of Moldova		Hungary	
		Number of Mentions	Percentage	Number of Mentions	Percentage
Time at the current place of work	Less than one year	15	15.8	9	5.3
	1-5 years	46	48.4	112	65.5
	6-10 years	24	25.3	44	25.7
	More than 10 years	10	10.5	6	3.5
Job position of the respondent	Top-level/Senior management level; Executive Suite; President, Vice President	8	8.4	5	2.9
	Middle-level manager; Department head	11	11.6	24	14.0
	First-level manager; Supervisor; Front-line manager	26	27.4	36	21.1
	Not in a supervisory/leadership position	43	45.3	92	53.8
	Contract employee	7	7.4	13	7.6
Organization size	Micro (less than 10 employees)	7	7.4	8	4.7
	Small (10-49 employees)	23	24.2	36	21.1
	Medium (50-249 employees)	29	30.5	59	34.5
	Large (250+ employees)	36	37.9	68	39.8
Sector of organization	Private	72	75.8	144	84.2
	Public	23	24.2	26	15.2
Economic sector of employment	Manufacturing	16	16.8	26	15.2
	Services	21	22.1	40	23.4
	Information services	34	35.8	59	34.5
	Human services	23	24.2	42	24.6

Source: authors' editing, 2024.

Nevertheless, a cause-and-effect relationship could not be determined solely based on the qualitative analysis. To have a better understating, the social, demographic, historical and economic indicators were used. The following resources presented in Table 4 were used for the qualitative analysis:

Table 4 Resources used for the performance of qualitative analysis

Organization	Variables/Reports
World Bank Databases (2000)	Population Growth; Primary School Enrolment; Secondary school enrolment; Tertiary school enrolment, female; Tertiary school enrolment, male; Life expectancy at birth; Domestic general government health expenditure; Domestic private health expenditure; Domestic general government health expenditure; Labor Force Participation Rate; Ratio of female to male labour force participation rate; Employment in industry/ agriculture/services; International migrant stock;
Hungarian Central Statistical Office	Pay gap of gross average earnings of full-time male and female employees in Hungary; Comparison of average gross earnings of full-time employees by economic branches together (in Hungary);
National Bureau of Statistics of the Republic of Moldova	Average monthly gross earnings per employee, by sex and gender pay gap; Status (formal and informal) in Employment; Comparison of average gross earnings of full-time employees by economic branches together (in Moldova);
OECD Reports	Educational Attainment, Glossary of Statistical Terms; 'The Value of People', in Human Capital; PISA 2018: Insights and Interpretations; Results for Hungary from PISA 2018; Results for Moldova from PISA 2018
World Economic Forum	Global Competitiveness Report (2010-2019); Global Competitiveness Index –6th pillar (skills); Global Competitiveness Report 2019, 5th pillar
World Bank Reports	World Development Report 2019: The changing nature of work. The Human Capital Index 2020: Human Capital in the Time of COVID-19
UN reports International Labor Organization	Migrant Workers: The Case of Moldova. Geneva.

Source: authors' editing based on the findings of a systematic literature review

Based on the results from both qualitative and quantitative analyses, the study proposes the following hypotheses:

− H1: There is a significant difference in the mean values of elements of human capital and job satisfaction between Moldova and Hungary.
− H2: There is a significant difference in the mean values of elements of human capital and job satisfaction across generations in Moldova and Hungary.

– H3: There is a significant difference in the mean values of elements of human capital and job satisfaction between private and public sectors in Moldova and Hungary.
– H4: A significant difference exists in the mean values of human capital elements and job satisfaction across organizations of different sizes (micro, small, medium, and large) in Hungary and Moldova.

Results

Internal consistency and validity of constructs

In both Hungary and Moldova, respondents provided positive evaluations for the statements measuring the three elements of human capital—Knowledge, Skills, and Competency—as well as Job Satisfaction, with mean scores approaching 4 on a 1-5 Likert scale (Appendix). The scales used in the empirical research exhibited strong psychometric properties, demonstrating very good internal consistency (Table 5) for both the Hungarian and Moldovan samples.

Table 5 Internal Consistency of Constructs Measured by Cronbach's Alpha

Dimensions (constructs)	Hungary	Moldova
Knowledge	0.945	0.909
Skills	0.929	0.927
Competency	0.891	0.719
Job satisfaction	0.943	0.888

Source: authors' calculations based on the survey data, 2024.

The construct validity of the constructs for Hungary is strong, as all items (statements) have factor loadings greater than 0.6. (Fig. 1)
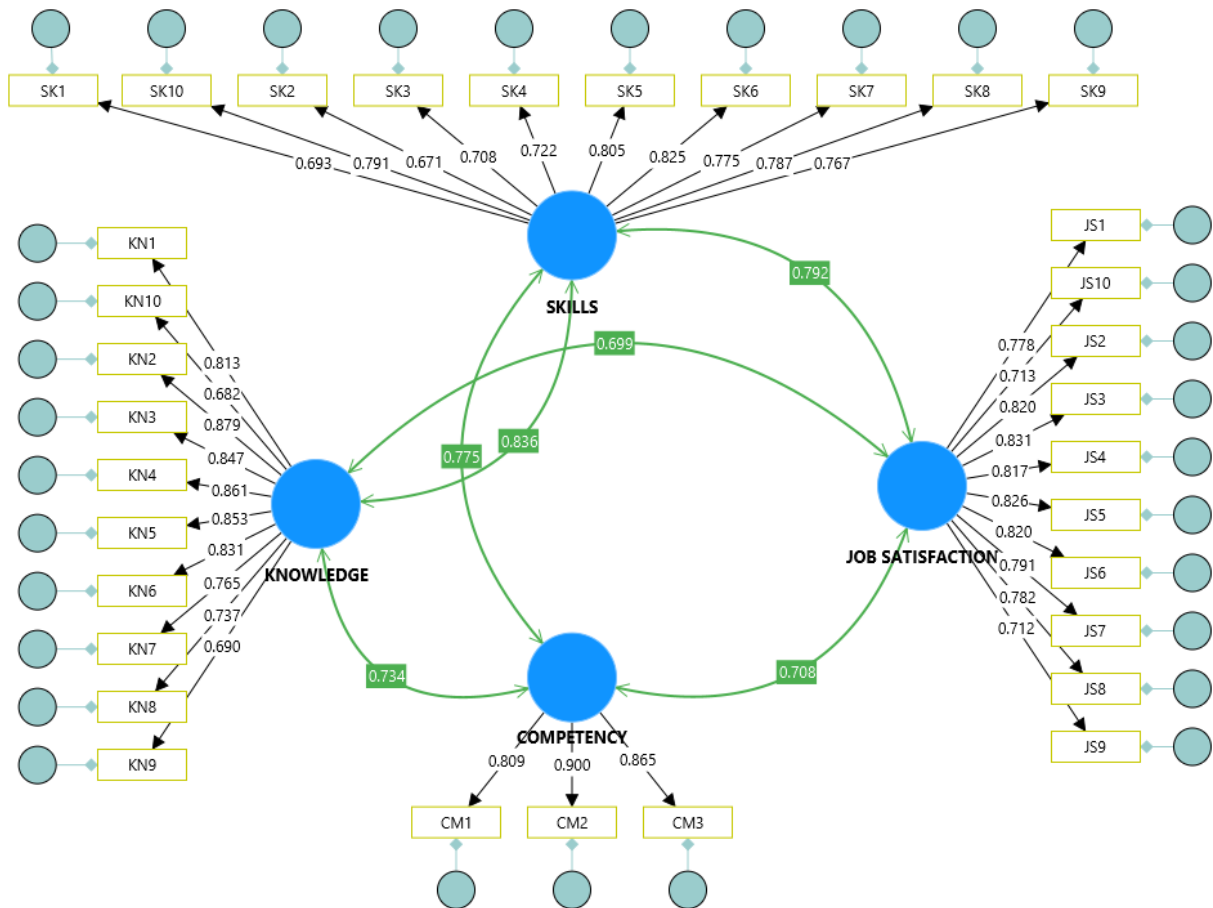
Fig. 1 The construct validity based on the CFA for the Hungarian sample (n = 171)
Source: authors' calculations based on the survey data

For Moldova, certain items with factor loadings below 0.6 were excluded from the constructs. Specifically, item KN8 from the Knowledge dimension and items JS8, JS9, and JS10 from the Job Satisfaction dimension were removed (Fig. 2).
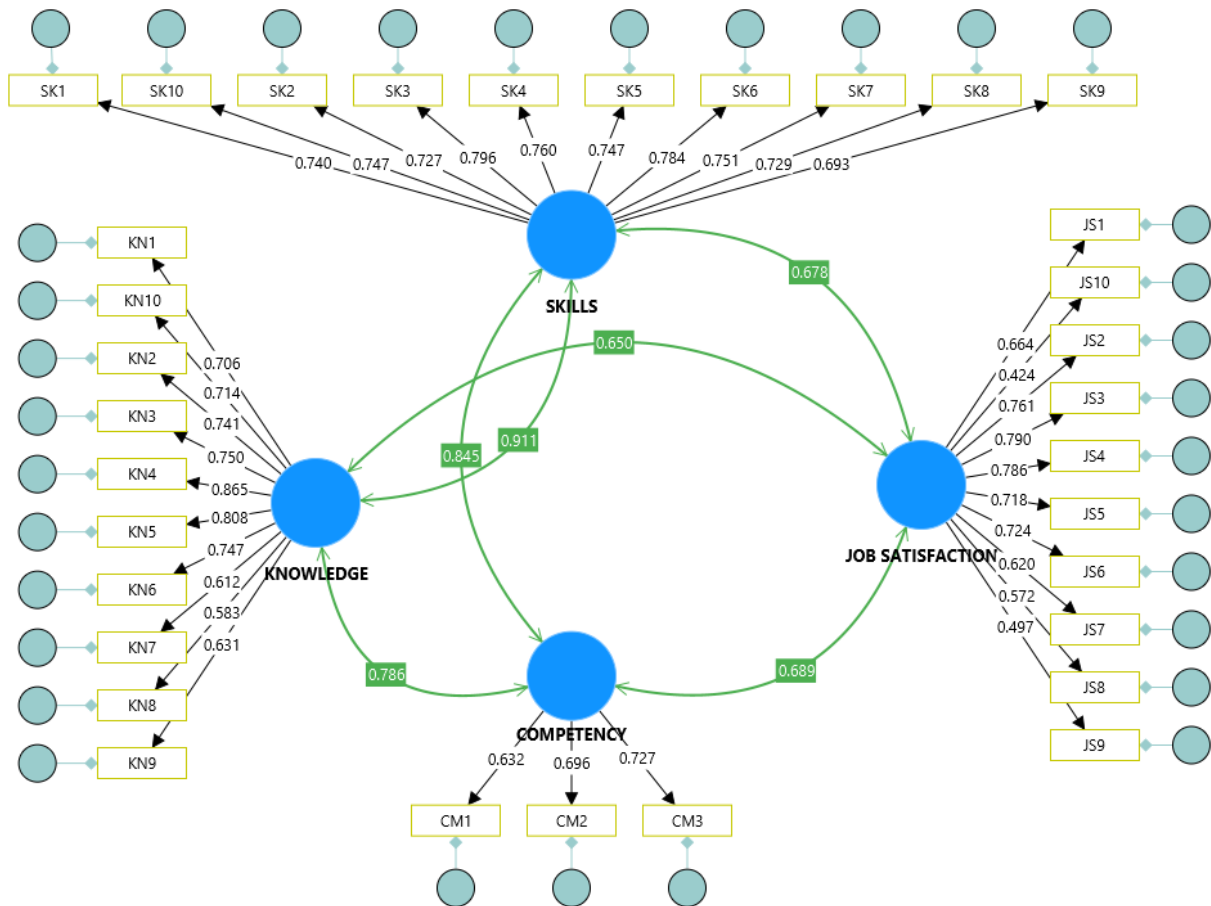
Fig. 2 The construct validity based on the CFA for the Moldavian sample (n = 95)
Source: authors' calculations based on the survey data

Construct values for each respondent were calculated using factor loadings. These values were then used to perform comparative analyses aligned with the hypotheses.

Differences in Human Capital and Job Satisfaction Between Hungary and Moldova (H1)

The Mann-Whitney U test results (Table 6) indicate no statistically significant differences between the two countries in Knowledge (U = 8071.000, p = 0.932), Skills (U = 7284.000, p = 0.163), Competency (U = 8005.500, p = 0.844), or Job Satisfaction (U = 7389.000, p = 0.221). The Z-scores, which are close to zero for each construct, further support the absence of significant variation. These findings suggest that despite the differing economic conditions and institutional frameworks in Hungary and Moldova, the influence of human capital dimensions on job satisfaction remains consistent.

Table 6 Results of the Mann-Whitney tests analysing differences between Hungary and Moldova

	Knowledge	Skills	Competency	Job Satisfaction
Mann-Whitney U	8071.000	7284.000	8005.500	7389.000
Wilcoxon W	22777.000	21990.000	22711.500	11946.000
Z	-0.086	-1.395	-0.197	-1.225
Asymp. Sig. (2-tailed)	0.932	0.163	0.844	0.221

Source: authors' edition and calculation

This consistency implies that these human capital factors have universal relevance, aligning with global trends in the determinants of job satisfaction across varied socio-economic contexts. A possible explanation for this result is the increasing globalization of work practices, particularly in sectors such as services and information technology, which may contribute to a convergence in the impact of human capital dimensions on job satisfaction.

Both Hungary and Moldova are experiencing the rise of knowledge-based industries, where skill-sets and competencies show similarities across national borders (World Economic Forum, 2020). For instance, Hungary has seen significant growth in its professional, scientific, and technical activities sector, indicating a robust presence of knowledge-based industries (Interreg Danube, 2024). Similarly, Moldova has been promoting a knowledge-based society, including strengthening research and development activities, innovations, and technological transfer (Faolex, 2020). This highlights the importance of adopting human resource strategies that prioritize global best practices in skills development, rather than focusing solely on country-specific approaches. However, further research with larger sample sizes is needed to investigate potential cultural or institutional factors that might differently impact job satisfaction in each country.

Generational Differences in Human Capital and Job Satisfaction in Hungary and Moldova (H2)

The Kruskal-Wallis test results did not reveal significant generational differences in Hungary (Fig. 3) for the mean values of Knowledge (H = 5.467, p = 0.141), Skills (H = 6.983, p = 0.072), Competency (H = 4.639, p = 0.201), or Job Satisfaction (H = 4.844, p = 0.184).
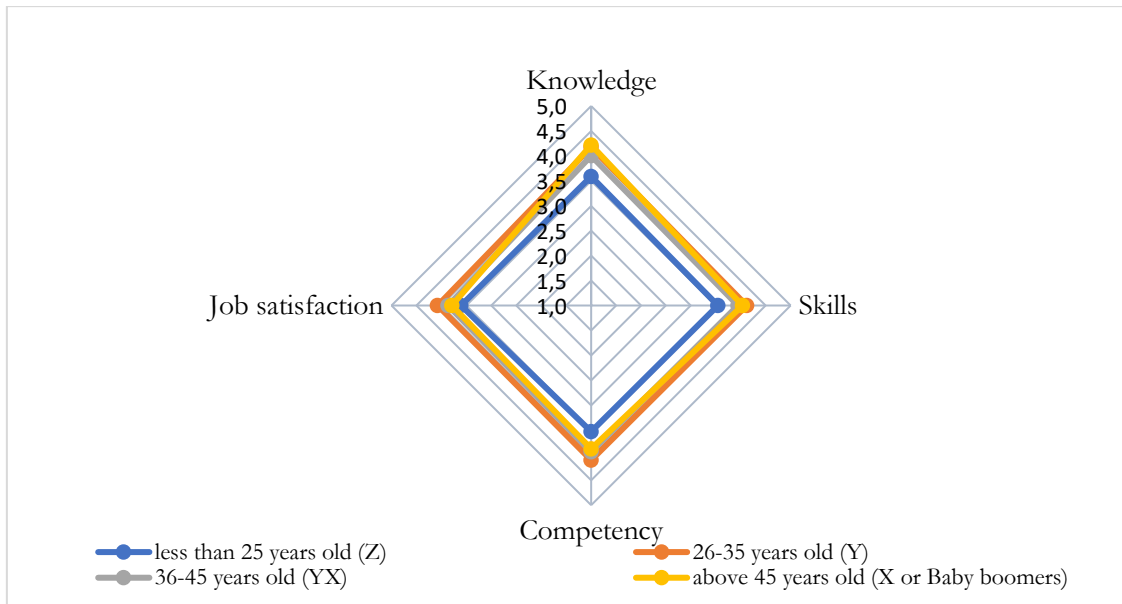
Fig. 3 Generational Differences in Human Capital and Job Satisfaction in Hungary (n = 171)

Source: authors' calculations based on the survey data

For Moldova, a significant difference among generations was confirmed only for the mean competency scores (H = 8.756, df = 3, p = 0.033). According to the Dunn-Bonferroni post hoc test, the average competency level for members of Generation Z is significantly lower compared to Generations Y and YX (Fig. 4). However, no significant differences were observed between Generation Z and Generation X or the Baby Boomer generation in competency levels.
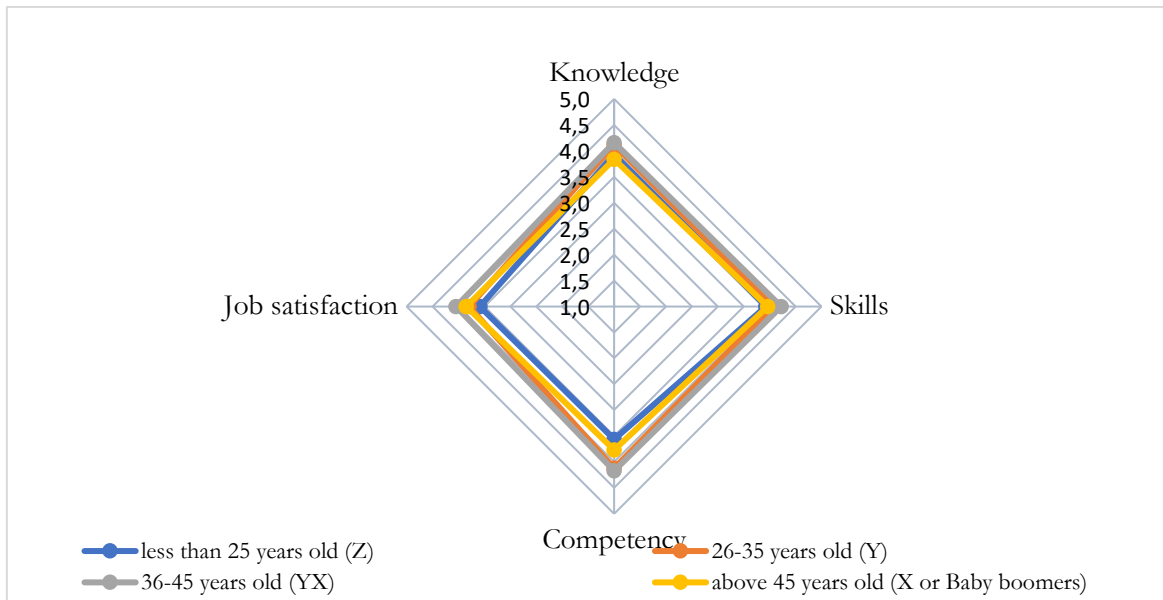

Fig. 4 Generational Differences in Human Capital and Job Satisfaction in Moldova (n = 95)

Source: authors' calculations based on the survey data

Education forms a foundational pillar of the aforementioned dimension, particularly primary education, which we consider essential for shaping the "generic" set of values. According to secondary analysis based on data from the World Bank (2021), the number of children attending primary education in Moldova was slightly above 100 in 2000 but has steadily decreased since then. By 2019, less than 90 children were enrolled in primary education. In contrast, Hungary maintained a consistently high rate in primary schools over the last two decades, ranging from a minimum of 96.76% in 2018 to a maximum of 102.32% in 2015. Additionally, PISA scores indicate a comparative advantage for Hungarian students, with a mean reading score of 476 compared to 424 for Moldovan students. These differences suggest slightly lower values for this dimension among Moldova's Generation Y, who grew up during this period of decline in educational indicators.

Regarding job satisfaction, the current analysis did not identify any statistically significant differences in mean values across generations. However, an interesting observation in Hungary—though not statistically confirmed—is that respondents aged 36-45 years reported slightly lower mean job satisfaction levels compared to those in the younger Z generation (under 25 years). This aligns with findings from analogous studies. For instance, Clark et al. (1996), in a study involving 5,000 UK employees, identified a U-shaped relationship between job satisfaction and age, with higher satisfaction levels among younger and older workers compared to middle-aged workers. They found overall job satisfaction peaked at age 36 before gradually declining.

Subsequent research by Gazioglu and Tansel (2006), analysing over 28,000 British employees, corroborated the U-shaped trend. Similarly, Fargher et al. (2008) observed the same pattern in Western European countries using data from 1999–2000. However, this trend, though present, was not statistically significant in a Central and Eastern European (CEE) sample set, which included countries such as Hungary, Poland, and the Czech Republic.

These findings offer valuable insights into the nuanced relationship between education, generational differences, and job satisfaction across different regions and time periods.

Comparative Analysis of Human Capital and Job Satisfaction in the Private and Public Sectors of Hungary and Moldova (H3)

In Hungary, a significant difference in average job satisfaction scores can be observed between the private and public sectors (Mann-Whitney U = 1530.5, Z = -2.999, p = 0.003). Employees in the private sector report higher job satisfaction compared to those in the public sector (Fig. 5). Generally, the public sector is associated with lower pay and benefits, as well as fewer and slower opportunities for career advancement (Rainey, 1991). Additionally, dissatisfaction with working conditions is prevalent, likely stemming from inadequate equipment and facilities. Job satisfaction is recognized as a critical factor influencing employee turnover and absenteeism, along with the associated costs (e.g., Mobley, 1982; Staw, 1984).
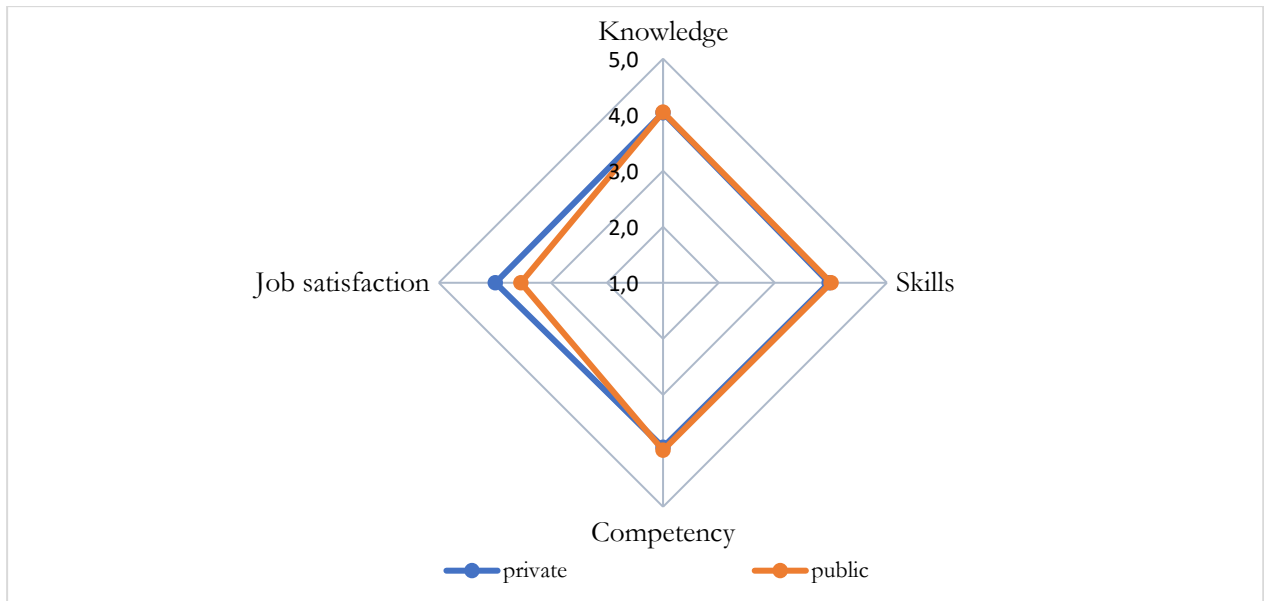
Fig. 5 Human Capital and Job Satisfaction: Differences Between the Private and Public Sectors in Hungary (n = 171)

Source: authors' calculations based on the survey data

In Moldova, the Mann-Whitney test did not reveal any significant differences between the private and public sectors in the mean values for knowledge (Z = -0.382, p = 0.702), skills (Z = -0.787, p = 0.431), competency (Z = -0.919, p = 0.358), or job satisfaction (Z = -1.156, p = 0.248) (Fig. 6).
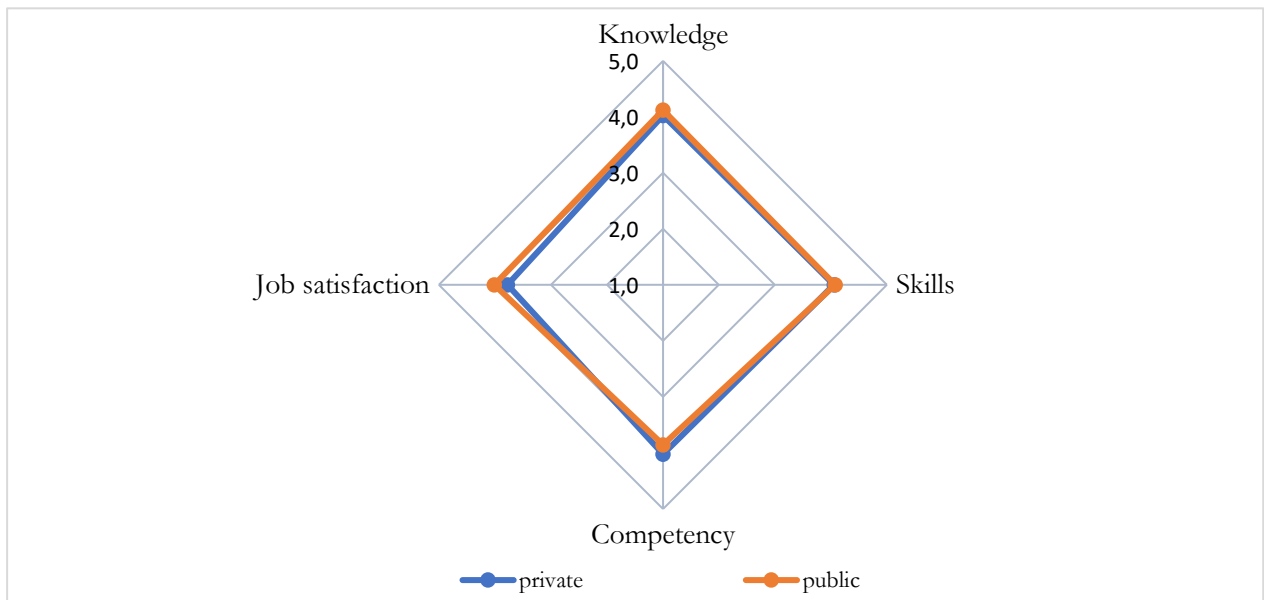

Fig. 6 Human Capital and Job Satisfaction: Differences Between the Private and Public Sectors in Moldova (n = 95)

Source: authors' calculations based on the survey data

The findings highlight lower job satisfaction levels among public sector employees in Hungary compared to their counterparts in the private sector. These results underscore the need for a comprehensive human resources strategy aimed at fostering positive attitudes among public sector employees, as this sector plays a pivotal role in delivering essential public services and supporting governmental administration.

Job satisfaction can be categorized into intrinsic and extrinsic dimensions (e.g., Ryan & Deci, 2000). Intrinsic satisfaction includes factors such as achievement, responsibility, recognition, and autonomy, while extrinsic satisfaction involves elements like salary, bonuses, coworker relationships, and working conditions. To address the identified challenges, one recommendation is to improve operating conditions and establish fair and transparent systems for recognition, promotion, and rewards.

Additionally, enhancing the social prestige of the public sector could contribute to higher job satisfaction levels. Efforts to shift public perceptions and improve the image of public organizations may encourage greater appreciation for the value and importance of public service.

Comparative Analysis of Human Capital and Job Satisfaction Across Different Organizational Sizes in Hungary and Moldova (H4)

The Kruskal-Wallis test (Table 7) identified significant differences across organizational sizes for all dimensions examined in both Hungary and Moldova. In both countries, micro-sized companies displayed significantly lower average values compared to large companies (Fig. 7–8).

Table 7 Results of the Mann-Whitney tests analysing differences between Hungary and Moldova

Country	Dimension	Test statistic (H)	p-value
Moldova	Knowledge	20.882	<0.001
	Skills	17.929	<0.001
	Competency	8.225	0.042
	Job satisfaction	11.981	0.007
Hungary	Knowledge	10.108	0.018
	Skills	19.557	<0.001
	Competency	16.728	0.001
	Job satisfaction	9.440	0.024

Source: authors' edition.

Furthermore, Dunn-Bonferroni post hoc tests indicated a significant difference in job satisfaction levels among micro-, medium-, and large-sized organizations in Moldova, as well as a significant difference between micro- and large-sized organizations in Hungary.
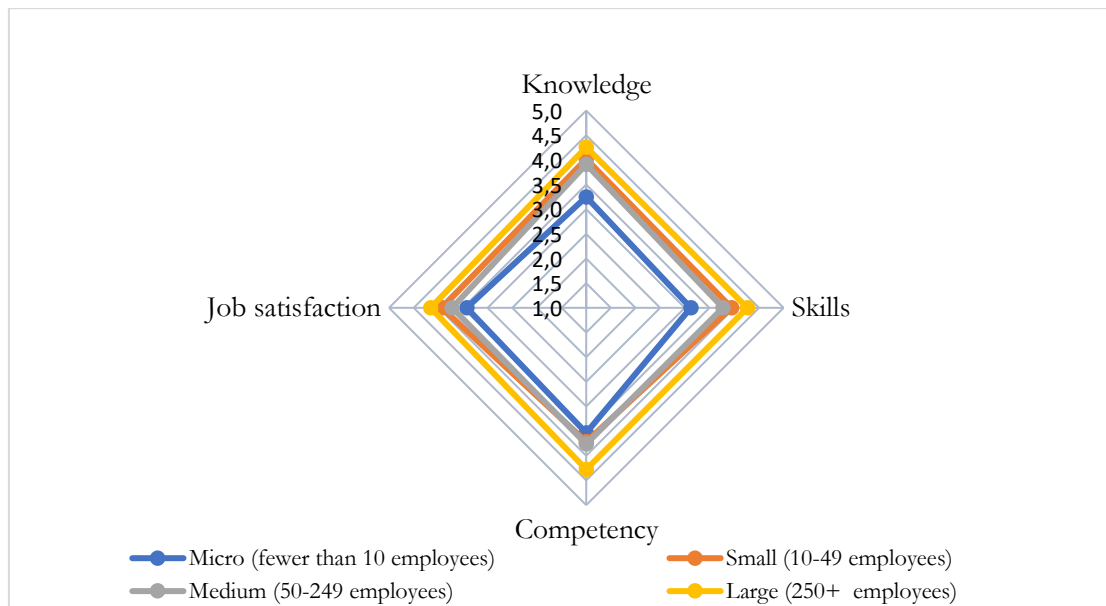
Fig. 7 Exploring Differences in Human Capital and Job Satisfaction Across Organizational Sizes in Hungary (n = 171)

Source: authors' calculations based on the survey data

Figures 7–8 show that the mean values are relatively similar for the two countries across different company categories. The conducted tests confirm a positive correlation between the examined dimensions and organizational size, with micro-sized companies consistently displaying significantly lower average values compared to large companies in both countries.

Additionally, the Dunn-Bonferroni post hoc tests revealed significant differences in job satisfaction levels among micro-, medium-, and large-sized organizations in Moldova, as well as between micro- and large-sized organizations in Hungary.

The questionnaire also included a question regarding respondents' likelihood of leaving their current jobs, a measure closely tied to job dissatisfaction. Specifically, the statement was: "I would like to reassign from my job," with five response options: 'it is absolutely sure,' 'it is very likely,' 'it is somewhat likely,' 'it is a bit unlikely,' and 'it is very unlikely.' The results indicated that approximately 19% of respondents in Moldova and 11% in Hungary were likely to leave their jobs (those selecting "it is absolutely sure" or "it is very likely").
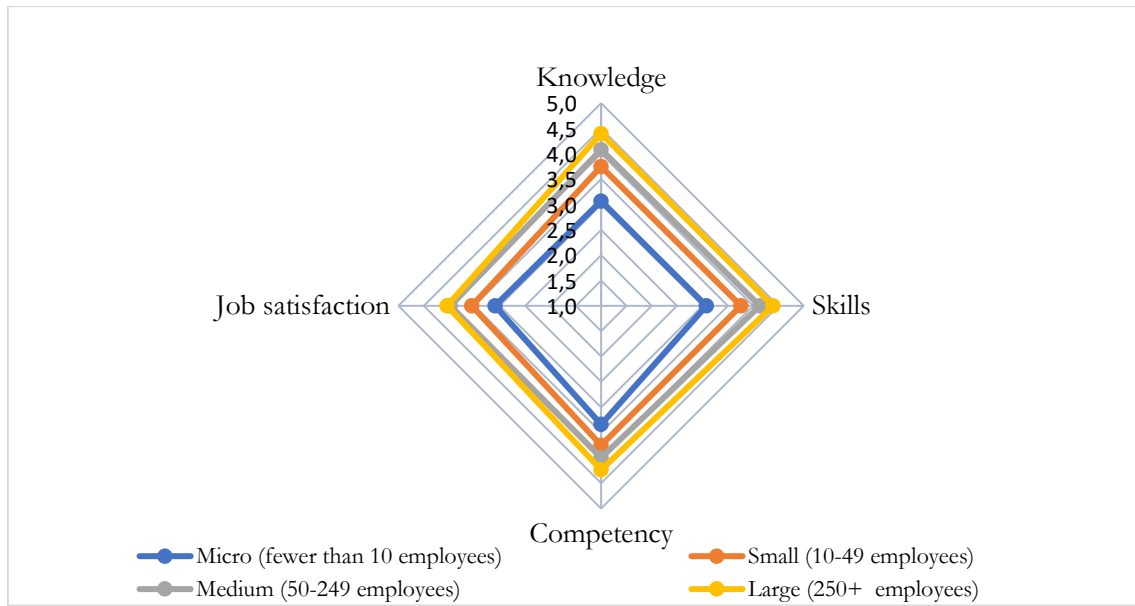
Fig. 8 Exploring Differences in Human Capital and Job Satisfaction Across Organizational Sizes in Moldova (n = 95)

Source: authors' calculations based on the survey data

To date, there is limited empirical research examining the combined tangible and intangible aspects of human capital dimensions and job satisfaction, particularly regarding their potential impact or variation across firms of different sizes. Recent studies on job satisfaction have explored various dimensions, including wage growth (Clark, 1999), comparison income and unemployment (Clark and Oswald, 1994, 1996), job matching (Belfield and Harris, 2002), and satisfaction in well-paid professions (Ward and Sloane, 2000; Bender and Heywood, 2006). A study by Tansel (2022) found that job satisfaction levels tend to be lower in larger firms, which may be attributed to less satisfactory management-employee relationships in these organizations. The study suggests that improving these relationships in large firms could enhance employee satisfaction and productivity. However, little attention has still been given to the correlation between job satisfaction and the divergent effects of working conditions and organizational structure based on firm size.

Several economic theories on workplace organization and structure provide insights into the relationship between organizational size and job satisfaction. One such framework involves High-Performance Work Organizations (HPWOs) (Applebaum and Berg, 2001; Bauer, 2004). HPWOs reflect a shift from hierarchical and task-focused management to more flexible structures characterized by self-directed teams, increased low-level employee participation in decision-making, and horizontal communication styles—attributes often associated with micro and small businesses. This theory would predict higher employee satisfaction in smaller firms due to greater involvement and flexibility. However, the findings contradict this assumption, as job satisfaction levels are significantly lower in micro and small organizations, where less productivity monitoring and greater decision-making involvement theoretically should lead to higher satisfaction.

The concept of organizational size is less clear when applied to public sector employees. For instance, government workers in small offices may perceive their organizational size differently, with some identifying with the office size while others consider the broader scale of the federal government.

The lowest overall job satisfaction levels were observed in Moldova's micro-sized organizations (those with up to 10 employees). In such firms, monetary rewards are often limited compared to

those offered by larger companies, which could be a key factor driving dissatisfaction. Conversely, the highest job satisfaction levels were found in Hungary's large organizations (those with at least 250 employees). Lydiksen et al. (2022) further support this, finding that higher job satisfaction at the firm level positively impacts a company's pre-tax earnings, emphasizing that satisfaction with achievements and management play key roles in this effect. Employees in these larger firms tend to be more satisfied with contingent rewards, working conditions, relationships with coworkers, communication, and, notably, pay and fringe benefits. These advantages, commonly associated with larger companies, reflect the employer size-wage effect and contribute significantly to higher levels of employee satisfaction.

Implications and recommendations

This research draws on human capital theory, which argues that investments in education, training, and skills development increase both individual and organizational productivity. As Becker (1993) argues, human capital is a key determinant of economic success, and this theory has been supported by numerous empirical studies. In the context of Hungary and Moldova, this study contributes to the ongoing conversation about how human capital shapes labour markets in transitioning economies.

Hypothesis 1 was rejected based on the study findings: despite the differing economic and institutional contexts, no significant differences were observed between Hungary and Moldova in the three elements of human capital—Knowledge, Skills, and Competency—or in Job Satisfaction. This suggests a universal relevance of these factors, aligning with global trends in workplace dynamics. Hypothesis 2, addressing generational differences, was partially accepted. Significant generational differences were identified only for Competency in Moldova, while no differences were observed for Knowledge, Skills, or Job Satisfaction in either country.

Hypothesis 3, concerning differences between private and public sectors, was partially accepted. It was supported in Hungary but not in Moldova.

Hypothesis 4, concerning differences among organizational sizes, was accepted. Organizational size has a significant impact on human capital dimensions and job satisfaction in both Hungary and Moldova.

Both countries should invest in targeted skills development programs to enhance employee capabilities and job satisfaction. Organizations should implement on-the-job training, workshops, and competency-based development plans tailored to different generations.

In Hungary, reforms in the public sector should focus on improving working conditions, establishing fair promotion and reward systems, and increasing social prestige through public awareness campaigns. Such measures could mitigate dissatisfaction and improve employee retention.

Micro-sized organizations, particularly in Moldova, require strategic support to improve job satisfaction. Governments and policymakers could provide incentives for training, funding for better resources, and mentorship programs to build capacity in smaller firms.

Large organizations in Hungary and Moldova should continue leveraging their strengths, such as better pay and benefits, while fostering inclusivity and opportunities for career advancement to maintain high employee satisfaction.

Limitations of the study

While the study includes respondents from both Hungary and Moldova across various sectors, the sample size (171 from Hungary and 95 from Moldova) may limit the generalizability of the findings. Additionally, the distribution of respondents may not fully represent all demographic and professional groups, particularly in underrepresented sectors or smaller geographical regions.

The data were collected at a single point in time, which restricts the ability to capture changes in human capital dimensions and job satisfaction over time. A longitudinal approach could provide deeper insights into how these factors evolve in response to economic or organizational changes.

The study relies on self-reported survey data, which may be subject to biases such as social desirability or inaccurate self-assessment. These biases could influence the accuracy of the responses regarding job satisfaction and human capital attributes.

Although the study highlights potential cultural and institutional differences between Hungary and Moldova, it does not deeply explore how these factors may mediate or moderate the relationship between human capital dimensions and job satisfaction.

While the analysis emphasizes differences in organizational size, it does not fully account for other organizational variables, such as leadership styles, organizational culture, or industry-specific factors, that might also influence job satisfaction.

The higher proportion of private-sector respondents may have influenced the findings, particularly given the differences in job satisfaction trends between private and public sectors in both countries. A more balanced sectoral distribution could provide a more comprehensive view.

The findings are context-specific to Hungary and Moldova and may not be directly applicable to other countries or regions with differing economic, cultural, or institutional landscapes.

The study focuses on human capital dimensions and organizational size but does not consider broader psychological factors (e.g., individual motivation, personality traits) or external influences (e.g., economic crises, labour market conditions) that could impact job satisfaction.

Future studies should explore cultural, institutional, and psychological factors influencing job satisfaction in greater depth. Additionally, longitudinal studies could provide insights into how human capital dimensions and satisfaction evolve over time in response to economic and organizational changes.

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Appendix

Descriptive Analysis of Items and Dimensions

Construct (Dimensions)/Items	Code	Mean		SD	
		HU	MO	HU	MO
Knowledge		4.04	4.05	0.80	0.79
I can learn what is necessary for a new task	KN1	4.01	4.17	1.04	1.14
I can refer to best practices and apply them to the task	KN2	4.04	4.17	0.93	1.03
I can use the Internet to obtain knowledge for the task	KN3	4.06	4.15	0.99	1.03
I share the information and knowledge necessary for the task	KN4	3.99	4.12	1.01	1.05
I improve task efficiency by sharing information and knowledge	KN5	4.06	4.12	0.91	1.06
I fully understand the core knowledge necessary for my tasks	KN6	4.03	4.05	0.94	0.95
I obtain useful information and suggestions from brainstorming meetings without spending too much time	KN7	4.05	3.76	0.99	1.09
I search information for tasks from various knowledge sources administered by the organization	KN8 *	3.97	3.79	1.03	1.15
I understand computer programs needed to perform the tasks and use them well	KN9	4.11	3.85	0.98	1.07
I am ready to accept new knowledge and apply it to my tasks when necessary	KN10	4.10	4.12	0.94	0.92
Skills		3.97	4.06	0.76	0.79
I understand and contribute to the organizational goals	SK1	4.06	4.00	1.00	1.05
I know the process of making a decision	SK2	4.05	4.02	0.96	1.01
I know how to weigh the relative importance among different issues	SK3	3.94	4.03	1.04	1.06
I solicit input for decision making from my team members	SK4	4.01	4.07	1.00	1.07
I am able to change decisions based upon new information	SK5	3.99	4.06	0.94	1.04
I respect the thoughts and opinions of others in the team	SK6	3.93	4.15	1.02	0.91
I treat others with courtesy	SK7	3.96	4.18	0.94	1.01
I accept individual differences among members	SK8	3.92	4.00	0.89	1.16
I can identify potential problems readily	SK9	3.96	4.00	0.94	0.98
I willingly contribute solutions to resolve problems	SK10	3.95	4.11	1.00	0.92
Competency		3.94	3.98	0.87	0.82
I compete in performing my job	CM1	3.96	3.71	0.98	1.24
I am effective in doing my work	CM2	3.95	4.16	0.95	0.85
I am qualified to do the job well	CM3	3.93	4.03	0.95	1.02
Job satisfaction		3.92	3.83	0.81	0.76
I feel positive and up most of the time I am working	JS1	3.95	3.68	1.04	1.09
I feel valued and affirmed at work	JS2	3.96	3.85	0.90	0.91
I'm engaged in meaningful work	JS3	3.94	3.89	0.97	1.10
My values fit with the organizational values	JS4	3.90	3.63	0.94	1.06
I trust our leadership team	JS5	3.95	3.82	0.95	1.04

I have opportunities to learn what I want to learn	JS6	3.91	3.78	0.98	1.15
I know what is expected of me at work	JS7	3.91	4.08	0.98	0.93
My opinion counts	JS8*	3.95	4.01	1.01	1.09
I am fairly compensated	JS9*	3.87	3.69	1.07	1.13
I have the materials and equipment that I need in order to do my work right	JS10*	3.90	4.02	1.09	1.03

Note: HU=Hungary, MO=Republic of Moldova, removed due to low (<0.6) factor loading

Source: authors' calculations based on the survey data