The Role of Intrinsic and Prosocial Motivation, Perceived Organizational Support and Job Autonomy in Strengthening the Work Engagement of University Teachers

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Abstract **– The research aims to investigate the connection between intrinsic and prosocial motivation and job involvement, as well as to confirm the role of perceived organizational support and job autonomy in this connection. Data was acquired through a questionnaire-based survey in the period from October to November 2022. The respondents were university teachers (268) from Slovak universities and colleges. The PLS-SEM method was used for the analysis of paths between variables and the analysis of direct and indirect effects using SmartPLS 3.3 software. The findings point to a positive association between the intrinsic and prosocial motivation of university teachers and their work engagement. A more prominent role is played by internal motivation, which however is currently less felt by teachers. Engaged university teachers are one of the key prerequisites for the transformation of higher education towards quality and sustainability.**

Keywords **– Work engagement, higher education, university teacher, intrinsic motivation, prosocial motivation, perceived organizational support, job autonomy.**

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1. Introduction

Higher education has been undergoing many fundamental changes in recent years. These changes relate to the way they are financed, increasing internationalization, increasing emphasis on the applicability of academic work, resulting in a change in university culture [59]. The work engagement of university teachers is currently a crucial element in the advancement of the level of excellence of universities [65], [97]. This is required by society and rigorously evaluated in the accreditation processes that individual universities and colleges go through. A university teacher is not only a teacher but also a scientific and research worker. Balancing both areas places high demands and requires strong work commitment. Engaged teachers see their own work as a means of personal growth, they are willing to exert significant effort to overcome obstacles, they are interested in their own professional growth [49]. Such teachers are a guarantee for schools of high-quality research and educational output, which is required from them in terms of their competitiveness and sustainability.

In this context, it is interesting for the management of universities to know what are the determinants that effect the work engagement of teachers and what are the deeper mechanisms of their action. Is the teacher's intrinsic motivation or prosocial motivation in the sense of spreading and providing knowledge to students a sufficient factor? Or is it necessary to support this relationship with certain elements and tools of leadership? Several already completed studies dealing with the engagement of university teachers have confirmed the role of their own intrinsic motivation as an important factor [66], [26], [27], [98], [18]. The authors dealt with prosocial motivation [81], [95], [83]. Researchers have also addressed job independence [61], [87], [45], organizational support [79], [58] and their relationship to engagement.

Partial relationships between individual factors were the subject of previous studies that confirmed their relevance and role in the academic environment. However, these factors do not act in isolation they are present together in the work process and influence each other. In their complex deeper investigation reveals a gap that needs to be filled with additional research.

Even though there is a strong emphasis on the value of teacher involvement, there are still several under-researched questions. Most engagement research focuses on its impact on performance, which is clearly confirmed [89], [49], [60]. Nevertheless, there is a void in the research concerning and promoting the arguments with empirical findings on how it is possible to connect the influence of organizational and psychological factors that could work together to predict positive outcomes in promoting engagement. The research seeks to investigate the connections between intrinsic and prosocial motivation and the job involvement of university teachers, as well as to validate the impact of appreciated organizational support and job autonomy on these links.

2. Formulations of Hypotheses Work Engagement of University Teachers

The university environment is starting to deal progressively with the matter of increasing the work performance of teachers and their job involvement (WE). Job involvement is generally determined as a specific mental state that is favourable and satisfying in relation to work and that includes three dimensions: energy, enthusiasm, immersion. Instead of teachers viewing their work as stressful, they view it as an object of self-fulfilment [62], [46]. Engagement can achieve positive results both at the personal level - the personal progress of the employee as well as at the university level – the quality of the employee's performance [85]. Understanding this concept as the teacher's commitment and motivation towards the employer includes several current involvement findings [9].

University teachers as key figures of higher education institutions are crucial in enhancing the standard of teaching and academic research, as well as fulfilling the social role of universities. They are currently under high tension from work quality requirements, student demands, reduction of funds from governments and new ICT requirements [97]. Realized research point to the importance of teacher work involvement in the academic environment. Significant correlations were confirmed among employee commitment and task accomplishment [89], [49], [60] higher productivity [88], innovative behaviour [52], the quality of teaching and research [14], finding effective teaching methods and discussing problems [59].

Lower teacher engagement is associated with burnout and medical issues [38], [86] and high fluctuation [5]. School rating and student quality were identified as factors with a positive impact on teacher engagement [62].

2.1. Prosocial and Intrinsic Motivation as Explanatory Variables

According to Grant [29], prosocial motivation (PSM) is the motivating force of a teacher to help, shield, and foster the well-being of others. It is defined by self-control, goal orientation, and time orientation. The degree of prosocial motivation can vary considerably among employees - teachers. Teachers with high PSM are less concerned with personal rewards and their goals are not self-interests or anticipation of personal benefits [96]. The most significant PSM is autonomous motivation, which includes the motivation to perform prosocial behaviour based on intrinsic interest because the consequence is personally valued, which is related to internal regulation [75]. There is also regulated PSM, which involves the motivation to perform prosocial behaviour to alleviate feelings of guilt and embarrassment or the motivation to perform prosocial behaviour to escape negative consequences, which is related to external regulation [12].

Prosocial oriented employees - teachers represent valuable human resources for the organization. Several studies have identified a positive link between altruistic orientation and job involvement within the academic environment [1], [13], [3], [30].

Studies have also been carried out that combine several variables entering the relationship between PSM and WE. Bakker [6] reports altruistic orientation strengthens the link between work benefits, employee involvement and job achievement and weakens the connection between work challenges, employee exhaustion and job outcomes. Thus, teachers' reactions to work challenges and work benefits vary according to their altruistic orientation. Studies finding from Zhang *et al.* [93], Shao *et al.* [81] has shown the alignment of prosocial motivations of employees, their superiors and the organization creates a tripartite synergistic effect with a positive impact on employee work engagement. Shin *et al.* [83] point there was a weaker, non-positive mediated impact of employment uncertainty on teacher effectiveness via job involvement for teachers with high prosocial motivation. As stated by Zhang *et al.* [95] conflictual interpersonal relationships can decrease PSM and WE.

The outcomes of the above studies are beneficial for the management and leadership of university teachers in the work process and based on them it is suggested that the prosocial motivation of university teachers is positively related to their work engagement.

H1: PSM and WE are positively correlated.

2.2. Inner Motivation

Inner motivation (IM) differs from prosocial motivation. In the case of intrinsic motivation, employees motivate themselves by doing work that directly satisfies their needs or from which they expect the fulfilment of their goals. It is not a desire to exert effort for the benefit of other people as in prosocial motivation [28]. The most important intrinsic motives include the need for activity, the need for contact with other people, the need for success, the desire for power and the need for self-realization, the opportunity to develop one's abilities and skills. An intrinsically motivated employee performs work for his or her natural satisfaction because the employee enjoys the work or is a challenge and not for external consequences, pressures or rewards [32]. The extent to which teachers are intrinsically motivated is a predictor of their persistence and performance [20], [11], [31], [10]. The core reason is rooted in the understanding that inner orientated actions are self-reinforcing [23].

The choice of a teacher's profession is largely supported by the intrinsic type of motivation. This factor leads educators to be fully committed to their work and putting resources into their own professional growth, while also focus on supporting the progress of the students [22], [66]. The issue of educators' intrinsic work motivation has therefore been the subject of numerous studies. Their results in an academic environment have demonstrated that individuals with high IM tend to outperform others [77], [15] as Froiland *et al.* [24] found, IM is a precursor to involvement, which in turn leads to performance.

The relationship between IM and WE are not only direct, but also supported by other variables. One of them is creativity [26], when teachers are driven by internal rewards and can mentally step away from their jobs, they demonstrate higher levels of creativity and stronger commitment. According to Xu *et al.* [98] decent work positively influences employee engagement, with intrinsic motivation acting as a partial mediator.

Considering the data presented, a positive association between university teachers' IM and level of their job involvement is anticipated.

H2: IM and WE are positively associated.

2.3. JA and POS as Mediators - Job Autonomy

Job autonomy represents a level of organizational structure that grants teachers the latitude, liberty, and discretion to plan, decide, and execute their work tasks [64], [43], [63]. JA is linked to teachers' freedom to select their own objectives, instructional approaches, and pedagogical techniques [77].

According to Sehrawat [78] a teacher's job autonomy includes academic freedom in the conditions of study, learning and teaching.

In the teaching profession it is necessary to have a certain degree of autonomy also for the reason that teachers are able to immediately and adequately solve various unexpected situations that occur in the workplace [87]. Teacher autonomy grants educators the discretion to determine teaching methods without significant external control [68]. By leveraging this authority, the teachers' creative abilities and active participation in their roles, leading to greater involvement can be enhanced. By leveraging this authority, the employees' capacity and active participation in their roles, leading to heightened levels of engagement can be enhanced [95].

Several authors have investigated and identified a strong association between employee autonomy and engagement on an individual basis [61], [95], [87], but also at the level of teams [94]. School-based teacher autonomy is a key factor in cultivating positive work attitudes [95], also encourages their innovative manner [50].

Research has also been conducted indicating a direct correlation between IM and JA [45], [92]. Robertson and Jones [73] suggest that when teachers feel empowered by their school to make independent decisions, they are more inclined to be intrinsically driven and exhibit exceptional methods. Investigations by Joo *et al.* [47], Dysvik-Kuvaas [17], Malinowska *et al.* [57] also support the idea that IM mediates the relationship between job autonomy and work accomplishment, whereas if the organization allows a greater degree of freedom and autonomy to its employees, the level of intrinsic motivation can increase and overall, it leads to energetic, enthusiastic and more dedicated work of the employee - teacher.

Based on already completed studies, it is assumed the correlation among educators' IM and their work engagement is influenced by the job autonomy they feel in their work.

H3: JA mediates the positive link between IM and WE.

The area under investigation was also the association among prosocial motivation and job autonomy. Not only the direct effect [25], but also the indirect effect [8], [55], and the moderating impact [54] were investigated.

Studies have repeatedly demonstrated a link among work autonomy and prosocial motivation. According to Gagné [25] the support of job autonomy in the academic environment leads to the fulfilment of fundamental psychological needs, which increases involvement in prosocial activities. According to Cai *et al.* [8], Liao *et al.* [55] teachers with higher prosocial motivation tend to excel when granted greater independence in their roles.

The study revealed that a high degree of job autonomy indirectly affected the link among PM and job performance by fostering a responsible attitude. Lan *et al.* also explore the impact of prosocial motivation and its interaction effect with job autonomy on the behaviour of employees in assuming responsibility [54]. Research results have shown that job autonomy can activate employees' prosocial motivation by engaging the employee in taking responsibility, leading to higher levels of job performance.

H4: A positive association exists between PSM and WE, with JA acting as a mediator.

2.4. Perceptions of Organizational Care

Perceptions of organizational care (POS) is characterized as an organizational strategy that appreciates the contributions of its employees and fosters their mental health [4]. According to the authors Örucu *et al.* [67] POS focuses on employees' beliefs, the company appreciates their work and is concerned about their welfare. Perceptions of organizational care can therefore be considered as the perception of support by employees who accept the inputs they provide to the organization and the result of their efforts is the attention the organization pays them [39]. As stated by Rhoades *et al.* [69] POS is associated with categories such as fairness, support from superiors, organizational rewards and favourable working conditions. Alvi *et al.* [2] investigated the factors that influence POS in the organization, his findings indicate that job autonomy is one of the strong predictors.

Research has shown that POS positively affects teachers' work engagement [79], [53], their job performance [69], and the level of their identification with their company [16]. Beyond the direct impacts of POS, researchers also investigated indirect effects. An investigation of Schantz *et al.* [82] demonstrated perceptions of organizational care/support acts as a buffer between low levels of job involvement and both fluctuation and organization-directed inappropriate behaviour.

The mutual association between POS and PM was the subject of interest of Ullah *et al.* [90], which perceived organizational support is a driving force of prosocial motivation. If organizations support their employees in helping their colleagues in the work environment, they also support the engagement to their organization. Based on previous findings, it is hypothesized that POS serves as an intermediary between PSM and WE.

H5: PSM and WE are positively related, with POS acting as a mediator.

The role of IM in the association between PSM and WE were also a subject of interest in previous studies. According to the findings of Kamil *et al.* [48] teachers who are highly intrinsically motivated are more apt to react positively to elevated levels of perceptions of organizational care. Shah *et al.* [80] found perceptions of organizational care acts as an intermediary between intrinsic and extrinsic motivation and employee retention. Findings show that employee retention depends on how employees perceive support from the organization. Consequently, it is evident that perceptions of organizational care play a crucial role in linking employee motivation to retention. Analyses of the mentioned studies showed positive impacts of POS on the part of employees and the organization and based on them, it can be assumed that POS is a mediating factor among the inner orientation of university teachers and the level of participation in their work.

H6: IM and WE are positively related, with POS acting as a mediator.

As part of the research model, the joint action of both mediators in mutual relationships is examined.

H7: PSM and WE are positively related, with JA and POS acting as joint mediators.

H8: IM and WE are positively related, with JA and POS acting as joint mediators.

The study's theoretical basis is visually depicted in Figure 1.

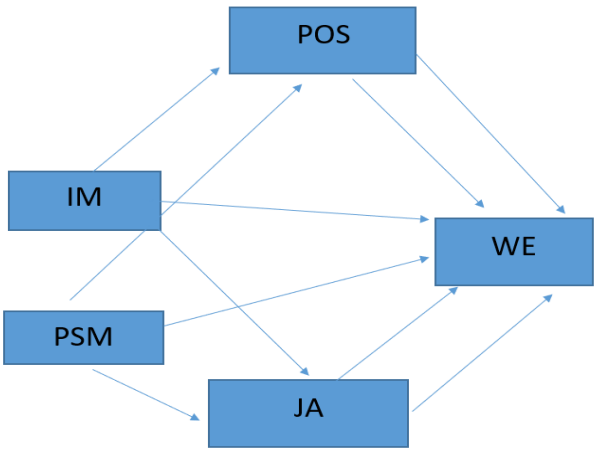

Figure 1. Theoretical basis of the study

3. Methods

The dataset was derived from a questionnaire distributed to the university population in Slovakia between October and November 2022.

University teachers were approached for cooperation in the research, the purpose was explained to them and they were requested to complete an online survey. By filling it out and sending it, they expressed their consent to data processing. In total 286 replies were collected from university teachers with an average age of 45,92 years (min = 25, max = 77, SD = 11,97), a mean of teaching period 16,71 y (min = 1, max = 49, SD = 10,88). Among the 286 teachers, there were 129 men (45,1%) and 156 women (54,5%). The survey was attended by 55,6% assistant professors, 26,2% associate professors, 12,9% professors and 4,9% teachers with other job titles. Most respondents worked in the field of social sciences (49,7%), 17,5% were from the field of humanities, 8,4% agricultural sciences, 7,3% technical sciences, 7% natural sciences, 4,5% medical sciences and other sciences 5,2% of respondents.

The survey was conducted within the Slovak higher education system. The assessment instruments used in this study are not available in Slovak language, so the methods to validate the results and methodological rigor of the frames were established. The primary focus is on back-translation prior to instrument administration. The instrument is subjected to a forward and backward translation process by bilingual professionals to ensure its accuracy and equivalence in both languages. In cases where translation inconsistencies occurred, certain items were reworded to achieve meaning equivalence. The questionnaire was constructed using short, simple sentences and noun repetition to minimize pronoun use.

Ryan *et al.* [76] self-regulation scales provided the basis for the items used to assess prosocial motivation (PSM) and intrinsic motivation (IM). Prosocial motivation contains four items answering the question of how significant the opportunity is to assist others when considering employment. This definition is consistent with Grant's [28] characterization of altruistic orientation as the motivational orientation to act for the benefit of others." This type of variable is also used in other sectors (public administration in the sense of serving the public, healthcare - helping patients, education - providing knowledge). Intrinsic motivation includes four items containing internal interest in work and its content. A 5-point Likert scale was employed, with 1 indicating strong disagreement and 5 representing strong agreement.

Perceived organizational support (POS) represents the degree to which employees feel aligned with the organization's mission and vision.

The items in the questionnaire were adapted to the perspective of the respondents, based on Eisenberger's *et al.* [19] initial questionnaire, contained seven items. A 5-point Likert scale was employed, with 1 indicating strong disagreement and 5 representing strong agreement.

Job autonomy (JA) was quantified by assessing employees' agreement with items on a 5-point Likert scale that measured perceived job autonomy. The Job Diagnostic Survey (JDS) of Hackman and Oldham [38] was used in the study.

Using the nine-item Utrecht Work Engagement Scale, the employee involvement (WE) as conceptualized by Schaufeli *et al.* was measured [84] and validated in numerous studies [33], [91].

The frequency of responses was rated on a 5-point Likert scale anchored at never (1) and always (5). All three components of this scale are covered.

Control variables, age (in years), gender, university experience and teacher's title, the field of study in which they work were selected due to their theoretical grounding and possible effects on the investigated correlations. In previous studies Hitka *et. al.* [42] discussed differences in motivation in terms of age, Misu *et al.* [62] and Iyer [46] investigated how teacher work engagement varied according to teaching experience and school performance as measured by national rankings. Differences in intrinsic motivation based on gender were discussed by Lorincová *et.al.* [56], Iyer [46], who confirmed gender differences in approach to intrinsic motivational factors and recommend organizations to differentiate the motivational tools used in terms of the gender of the employee. Mascarenhas *et al.* [58] discovered variations in the perception of organizational care among employees, with gender being a significant factor for teachers. Meng *et al.* [59] and Topchyan *et al.* [89] further examined the effects of aging, gender, education level, and professional classification in this context.

The questionnaire consisted of 27 indicator variables. To mitigate the common problem of similar research, namely common method bias, various strategies were employed. The items in the questionnaire were mixed up and scattered randomly, for some questions inverted answer scales were used. The questionnaire was divided into several sections that were presented in different contexts to prevent respondents from being biased by prior answers or preconceived notions about the outcomes. The VIF indicator was also calculated. A VIF score exceeding 3,3 indicated an abnormal correlation, the method's susceptibility to introducing systematic error.

Therefore, if the VIF values, which were the result of the full collinearity test, were at the level of 3,3 or below, a common method model bias could be ruled out [51].

After calculating collinearity through Smart Pls, all intrinsic VIF sums - below the 3,3 level were discovered.

To examine the proposed research model, the PLS-SEM technique was employed [35].

This allowed to simultaneously test multiple hypotheses within the framework of direct and indirect causal linkages in a complex system [34], [71], [72]. The decision for this model was made given the study group population (286) and complexity of the suggested research framework. It is satisfactory due to the prediction of dependents using latent variable scores. SmartPLS 3.0 was used to evaluate the models concurrently [70], [74].

4. Results

The investigation within the PLS model comprises two phases [40], following one after the other. The analysis commences with a thorough examination of the measurement model's psychometric properties to pave the way for the subsequent evaluation of the structural model. A network of paths linking variables forms the model, visually summarizing the proposed associations. Links among variables include both direct and indirect pathways, as well as interactive influences impacts.

The initial focus is on assessing the measurement model to verify its adherence to standard criteria. A psychometric test is employed to validate the quality of the criteria which is determined for a given research sample. During the measurements it was found that these requirements were not met for the POS variable (specifically for POS1, POS3, POS5 and POS7), therefore these items were excluded from further calculations. The new measurement model consisted of the POS variable from the remaining 3 variables (POS2, POS4, POS6), while the findings indicated that this measurement model made sure all coefficients surpass 0.70, the reliability benchmark was satisfied [44].

The criterion of internal consistency was likewise satisfied. Reliability, assessed by Cronbach's Alpha (CA) and CR, was found to be within the desirable range of 0.70 to 0.95 [37]. Various indicators were employed to more accurately assess the consistency of the variables. CA was viewed a more established and conservative criterion. It was obvious that CA is satisfactory for all variables (0,770 - 0,877). It was believed that CR is the most lenient [72]. In the framework, CR fell within the range of 0,867 - 0,911. Additionally, rho_A was assesed, which was also acceptable (ranging from 0,771 to 0,887), theoretically positioning among CL and CR [72]. When assessing model, the extent to which the measures converge on a single underlying concept should also be examined.

To assess this, the mean variance explained was determined, the model exhibited a sum greater than 0.5 [44], suggesting each concept accounted for at least half of the total variance in its components.

Finally, a discriminant validity analysis was also performed. Because of the recommendations to use three tools to measure it [41], beyond the conventional F-L measure, multiple factor loadings [34], the HTMT was applied [72]. This is computed by averaging of the associations between indicators crosswise different concepts with a recommended value in the range of 0,85 – 0,9 according to the degree of difference or similarity of the constructs. Based on the Forner Lacker criterion, it can be stated that the concept's unique variance, as measured by the square root of AVE, was more substantial than its shared variance with other concepts. In case of Discriminant validity, assessed by heterotrait-monotrait correlations, all values were also in the range below 0,90 [41]. On the basis of the available data, it was determined that the discriminant validity was supported.

Table 1. Forner-Lacker criterion

	IM	JA	POS	PSM	WE
IM	0.822				
JA	0.505	0.828			
POS	-0.303	-0.308	0.854		
PSM	0.361	0.237	-0.177	0.849	
WE	0.735	0.531	-0.358	0.518	0.712

POS = Perceived organisational support, IM = intrinsic motivation,
PSM = prosocial motivation, JA = job autonomy, WE = work engagement

Table 2. HTMT index

	IM	JA	POS	PSM	WE
IM					
JA	0.626				
POS	0.348	0.383			
PSM	0.423	0.285	0.187		
WE	0.840	0.636	0.392	0.596	

Notes: POS = Perceived organisational support, IM = intrinsic motivation, PSM = prosocial motivation, JA = job autonomy, WE = job involvement

The conceptual framework outlines the hypothesized relationships between variables. The model is assessed using R2. Q-2 sums serve as indicators of the predictive power, strength of links [37]. The quality of the index is indicated by the magnitude of the path coefficients, measured by R-squared for the outcome construct [7]. The R2 value should be at least 0.1 [21]. The findings indicate that all R2 values exceed 0.1 (JA=0.259, POS=0.101, WE=0.650).

As a result, the model's predictive power is evident. Additionally, Q2 metrics indicate the relevance of prediction of the endogenous elements. A positive Q2 value suggests that the system has the relevance of prediction. The findings provide statistically significant evidence for the prediction of the elements. Additionally, the SRMR was employed to evaluate the fit of the concept to the data. The SRMR sum = 0.071. SRMR sums should be below 0.100 for the model to be considered adequate [36].

Table 3. Model fit summary

	Saturated Model	Estimated Model
SRMR	0.068	0.071
d_ULS	1.293	1.388
d_G	0.442	0.449
Chi-Square	730.396	740.554
NFI	0.791	0.788

Table 4. Construct prediction

	SSO	SSE	Q^2 (=1-SSE/SSO)
IM	1140.000	1140.000	
JA	855.000	709.820	0.170
POS	855.000	804.256	0.059
PSM	1140.000	1140.000	
WE	2565.000	1750.847	0.317

Notes: POS = Perceived organisational support, IM = intrinsic motivation, PSM = prosocial motivation, JA = job autonomy, WE = work engagement

Table 5. Direct effects results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Model 1- mediation of JA and POS in the relationship between PSM and WE					
PSM -> WE(total effect)	0.290	0.288	0.064	4.563	0.000
PSM -> WE(direct effect)	0.271	0.269	0.059	4.618	0.000
PSM -> WE (total indirect effect)	0.019	0.020	0.013	1.405	0.161
PSM -> JA -> WE(specific indirect effect)	0.011	0.012	0.012	0.892	0.373
PSM -> POS -> WE(specific indirect effect)	0.008	0.008	0.008	0.916	0.360
Model 2 – mediation of JA and POS in the relationship between IM and WE					
IM -> WE (total effect)	0.630	0.634	0.044	14.286	0.000
IM -> WE(direct effect)	0.518	0.519	0.056	9.213	0.000
IM -> WE (total indirect effect)	0.112	0.114	0.028	4.021	0.000
IM -> JA -> WE (specific indirect effect)	0.084	0.086	0.025	3.329	0.001
IM -> POS -> WE(specific indirect effect)	0.027	0.028	0.014	1.907	0.057
IM -> JA	0.483	0.484	0.051	9.463	0.000
IM -> POS	-0.275	-0.287	0.067	4.074	0.000
JA -> WE	0.174	0.178	0.050	3.485	0.001
POS -> WE	-0.100	-0.099	0.042	2.388	0.017
PSM -> JA	0.063	0.069	0.066	0.955	0.340
PSM -> POS	-0.077	-0.076	0.070	1.102	0.271

Remarks: POS = Perceptions of organizational care, IM = inner motivational orientation, PSM = prosocial motivation, JA = job autonomy, WE = work engagement, $p < 0,05$.

Table 5 presents all initially identified relations.

All examined direct effects are significant. These results directed to hypothesis H1 acceptance. PSM has a significant effect on WE ($\beta = 0.271$, $p < 0,05$). H2 - supported, IM has a significant effect on WE ($\beta = 0.518$, $p < 0,05$) to a greater extent than PSM.

The anticipated positive link among PSM and WE, mediated by JA, was not empirically validated. JA does not mediate the link between PSM and WE, indicating a non-significant indirect effect.

Hypothesis H4 was confirmed. JA acted as a mediator between IM and WE. JA exerted a substantial indirect influence ($\beta = 0.084$, $p < 0.05$).

The mediation was not full, as the indirect influence was below the 80% threshold. Only 13,3% of JA participated in the overall effect of IM in relation to WE ($\beta = 0.630$, $p < 0,05$) in the form of an indirect influence. The direct effect accounted for 82,2% of the total effect.

Hypothesis H5 was not confirmed. POS did not act as a mediator among PSM and WE. Indirect effect of POS was also not significant.

Hypothesis H6 was also not confirmed. POS did not mediate the association among IM and WE. Indirect effect of POS was not significant.

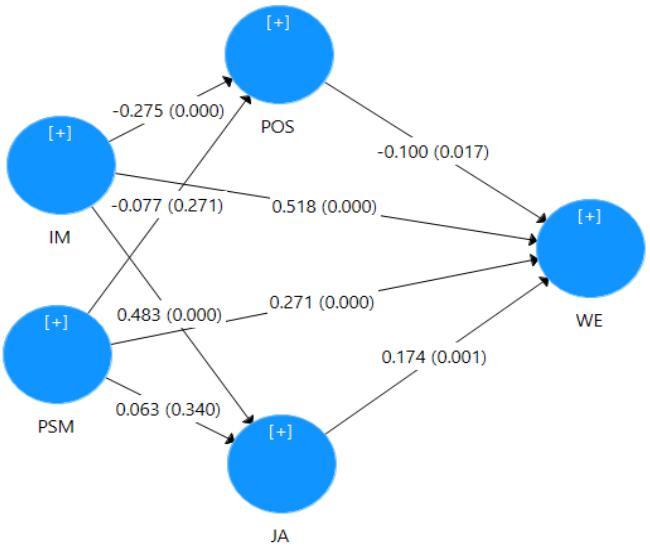

Figure 2. Empirical model

Extraneous variables were controlled for using multigroup analysis (MGA) and moderation.

After creating the MICOM, a multigroup analysis was performed. Table 6 reveals that none of the analyzed paths exhibited significant variations.

Table 6. MGA analysis

	Path Coefficients-diff (GROUP_genderPohlavie:(0.0) - GROUP_genderPohlavie:(1.0))	p-Value new (GROUP_genderPohlavie:(0.0) vs GROUP_genderPohlavie:(1.0))
IM -> JA	0.001	0.976
IM -> POS	-0.033	0.806
IM -> WE	-0.134	0.231
JA -> WE	0.004	0.977
POS -> WE	-0.131	0.120
PSM -> JA	-0.133	0.317
PSM -> POS	-0.071	0.633
PSM -> WE	0.031	0.796

Notes: POS = Perceived organisational support, IM = intrinsic motivation, PSM = prosocial motivation, JA = job autonomy, WE = work engagement

According to the MGA analysis, there were no statistically significant gender effects in the research sample for the examined relationships.

Tables 7-10 provide the outcomes of investigating interaction effects.

Table 7. Moderating effect of practice for the PSM-WE relationship

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Moderating Effect 1 -> WE	0.058	0.059	0.046	1.274	0.203
PSM -> WE	0.536	0.549	0.053	10.081	0.000
tenure -> WE	0.072	0.069	0.049	1.451	0.148

Notes: PSM = Altruistic motivational orientation, WE = job involvement

Table 8. Moderating effect of practice for the IM-WE relationship

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
IM -> WE	0.746	0.752	0.034	21.792	0.000
Moderating Effect 1 -> WE	0.049	0.048	0.041	1.212	0.226
tenure -> WE	-0.023	-0.024	0.043	0.542	0.588

Notes: IM = Intrinsic motivation, WE = work engagement

The findings indicate that neither the IM-WE nor the PSM-WE relationship is influenced by practice in a moderating manner.

Table 9. The moderating effect of age for the IM-WE relationship

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
IM -> WE	0.739	0.745	0.033	22.587	0.000
Moderating Effect 1 -> WE	-0.023	-0.021	0.045	0.514	0.607
vek -> WE	-0.005	-0.005	0.037	0.129	0.898

Notes: IM = Intrinsic motivation, WE = work engagement

Table 10. The moderating effect of age for the PSM-WE relationship

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
PSM -> WE	0.523	0.534	0.050	10.517	0.000
Moderating Effect 1 -> WE	0.023	0.034	0.050	0.459	0.646
vek -> WE	0.122	0.119	0.050	2.431	0.015

Notes: PSM = Prosocial motivation, WE = work engagement

In the case of the moderating impact of age, its significance was not demonstrated either for the IM-WE relationship or for the PSM-WE relationship.

5. Discussion

In connection with the current challenges related to the transformation of higher education, engaged teachers are a key resource of universities and colleges. They are a guarantee that they can fulfil their societal mission in a high-quality and long-term sustainable manner.

The research focused on determinants that can impact the engagement of university teachers. They are currently in a difficult situation in which enormous demands are placed on them. On the one hand, their task is to shape the educational level of society, to educate high-quality experts who will be a guarantee of the country's competitiveness.

On the other hand, they find themselves in the role of researchers fully participating in the creation of new knowledge in their scientific domains. Each of these roles requires different skills from academics, both make demands on their high commitment and willingness to constantly develop and grow professionally. With their performance they fundamentally influence the performance of the institutions in which they operate. Their own engagement is essential to this process. It is therefore in the interest of the management of universities and colleges to ascertain the influential elements on teacher involvement and give them due consideration.

In the study the influence of motivation was investigated, both intrinsic and prosocial, on the degree of engagement of university teachers and the degree of independence in their work and support from the institution in this relationship.

The findings confirm that the WE of university teachers is influenced by several factors. IM itself has a significant direct effect on it (β = 0.639), which is supported by the studies of Naffe *et al.* [66], and Fiorilli *et al.* [22], who also confirmed the existence of this relationship. The teacher's intrinsic motivation, his or her own need for activity, self-realization and success, the need for contact with other people and the opportunity to develop his/her abilities, skills and professional growth appear to be crucial determinant that affects the involvement of teachers in the university environment. The role of prosocial motivation in promoting engagement was also confirmed. Bringing benefit to others and influencing them is also crucial for teachers' engagement, despite a more limited extent in contrast to intrinsic motivation (β = 0.290). This confirms the findings of Shin *et al*. [83], Shao *et al.* [81], Abid *et al.* [1], Bakker [6], who also demonstrated the essentiality of prosocial motivation as a predictor of employee job involvement. In accordance with Shao *et al.* [81] it is believed that prosocial motivation can be a crucial aspect of involvement, especially if there is an alignment of prosocial motivations of employees, their superiors and the organization itself.

These findings thus confirmed the impact of both intrinsic and prosocial motivation for the work engagement of teachers in an academic environment. The intention was to explore these relations more deeply, emphasizing the role of JA and POS in them. The results suggest that the importance of intrinsic motivation for the promotion of engagement is more significant than that of prosocial motivation and this can be strengthened by perceived autonomy at work. This finding aligns with the Dysvik - Kuvaas study [17], which established a correlation between job autonomy and employee-perceived and manager-assessed work quality. Moreover, a positive association was observed among employees with high intrinsic motivation. Similarly, Malinowska *et al.* [57] demonstrated the mutual relationship of autonomy, internal motivation and teacher engagement. This is in line with Yasué *et al.* [92], whose findings suggest that teachers who feel more autonomous also tend to be more supportive of student autonomy. According to this study, obstacles acting in a negative direction on teachers' autonomy were represented by factors such as class size, high teaching load, or pressure to publish. Thanks to this knowledge universities should strive to create such a working environment where the autonomy of the teacher himself/herself is encouraged.

Findings further demonstrate that perceived organizational support plays a negligible role in the connection among IM - WE. The expectations were not met by this finding.

Given the outcomes of Saeed *et al.* [79], and Kose [53], which demonstrated that teachers' feeling of being supported by their organization enhances their job involvement, it is assumed that its role in the investigated relationship would be significant. However, the findings indicate that teachers primarily value their own freedom and the opportunity to make autonomous decisions in the performance of their work. The influence of support from the employer did not prove to be significant for increasing their work engagement. In the case of the PSM and WE relationship, neither autonomy nor support play a significant role, it rather seems that prosocial motivation acts autonomously, the feeling of meaningful work is sufficient for the teacher and acts towards increasing his/her engagement. If the work itself brings a sense of benefit to the environment, educators do not need any additional support and increased autonomy in this regard.

The results reveal that intrinsic factors have a more profound effect on teacher commitment compared to prosocial ones, currently educators feel a deficit in this area and rely more on their own prosocial motivation (the average value of the items of this variable reached 4,596 out of 5). They consider it important that their work benefits others and has a beneficial impact on them. The average values of the separate items of the intrinsic motivation variable are rated by the respondents as lower (3,941 out of 5), the lowest score was achieved by the items indicating that teachers enjoy their work and brings them pleasure. This finding points to unused potential and opens space for the implementation of measures to support the intrinsic motivation of teachers in the environment of universities and colleges.

As for the influence of the control variables chosen - age, length of teaching experience, gender, educational attainment, none of them are decisive for influencing the work engagement of teachers. Regarding the age variable, these outcomes concur with previous investigations. Iyer [46] also confirmed that the duration of a teacher's career does not influence their level of involvement in their work. Likewise, Misu [62] states that although the level of effectiveness of teachers' work increases with the development of work experience, work engagement does not depend on the age of the teacher. On the other hand, in the case of teachers' gender, findings differ from the outcomes of Lorincová *et al.* [56] study, which established the impact of gender on how internal motivational factors are viewed. Also, Mascarenhas *et al*. [58] identified gender differences in perceptions of organizational support in relation to teacher engagement.

On the contrary findings show that the link between motivation and employee commitment is independent of the mentioned variables, which is a positive finding based on employers' opinions, because it is not essential for developing differentiated strategies to support engagement for different categories of employees.

It follows from the above that currently university teachers mainly rely on their own prosocial motivation, although intrinsic motivation has a significantly higher potential to support their engagement. They also feel significant reserves when evaluating the degree of their own autonomy in the performance of work (the average score for this variable reached 3,98 out of 5), which is significant in increasing their engagement. Therefore, space is being created for university management to transform internal processes in such a way that they support to a greater extent the experience of teachers owns inner motivational orientation and operational freedom. Such a process could enhance the commitment of their core workforce.

6. Conclusion

The conceptual and applied benefits of the work have direct relevance to higher education management. Conceptually, it advances the knowledge base of how to increase university teachers' involvement. Especially by discussing the role of intrinsic and prosocial motivation of teachers as key employees in higher education, it helps to better understand their influence on engagement as a prerequisite for the quality of the output of universities. In addition, the findings offer a more nuanced view of how the elements are interrelated. Considering the study's focus on Slovak higher education, it is believed that the results have global relevance due to the similarities in the obstacles faced by universities and colleges in developed nations, but also the universal applicability of the investigated factors. In terms of practical application, the findings have far-reaching consequences for the top management of universities. Their ongoing transformation, processes of international accreditation and the associated high demands on teachers, resulting from their dual roles and problems with maintaining them are a current challenge for ensuring the quality of higher education not only in Slovakia. To solve this situation, an active approach to support especially intrinsic motivation is emphasized, the effects of which can be significantly supported by strengthening the degree of autonomy in the performance of work.

University teachers need to have such conditions created so that they can fully feel their autonomy and intrinsic motivation, which together with performing meaningful work for society will lead to their higher engagement.

Therefore, it is concluded that fostering faculty engagement seems to be an appropriate tactic for university administrators and human resource specialists. To achieve this, a comprehensive plan should be devised that integrates job restructuring and initiatives focused on interpersonal growth (coaching and mentoring programs). Universities should consider this factor when developing HR strategies. Hence, universities should build a culture which creates conditions for supporting intrinsic motivation, awareness of the importance of teachers' work for society and supporting their autonomy in fulfilling demanding pedagogical and scientific research tasks.

For universities to markedly enhance the involvement of university teachers, truly empowering staff requires a fundamental change in organizational procedures at all levels, from senior executives to supervisors.

While the research offers valuable insights, it is crucial to recognize its shortcomings. A cross-sectional approach to effectively conduct the research must be employed. Although associations between variables may be identified, this does not imply a causal relationship. Data were collected using self-completed questionnaires. The data were obtained only from the university teachers themselves. Despite efforts to reduce common method bias, response bias may have partially skewed the answers. The study's scope is limited to Slovak higher education institutions, which may constrain the generalizability of the findings. It can be assumed that due to the global nature of the topic of transformation, an enhancement the quality of the university level and common specificities of higher education, which is subject to international accreditation processes and uses comparable quality standards, it is possible to consider generalizing the results at least within European countries. Regarding this current topic, it would be appropriate in follow-up research to examine the influence of other variables in the role of mediators, especially the inner motivational orientation and involvement of teachers but also to pay attention to specific HR tools supporting the intensity of this relationship.

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