

# Leveraging a Synergy in Motivation to Effect Job Satisfaction of Healthcare Professionals in Public Blood Bank Units: A Cross-Sectional Study

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**Background:** Superior patient care requires a team of medical professionals who are motivated and satisfied with their jobs. However, in an occupational setting characterized by prolonged work hours and excessive stress, managers face increased challenges in their attempts to motivate employees and sustain high levels of job satisfaction.

**Aim:** This study investigates whether, and to what extent, extrinsic and intrinsic motivation might predict job satisfaction. It also examines how specific categorical variables moderate these correlations.

**Design:** The present study offers an empirical investigation of a path model that establishes a relationship between motivation and job satisfaction in healthcare professionals in public blood bank units. A PLS SEM was conducted on a sample of 218 individuals employed in public blood bank units in the Republic of Serbia.

**Results:** The findings provide valuable insights into the causal relationship among observed variables under different sample characteristics, such as gender, age, job position, and employment status. The findings also indicate that extrinsic motivation is a significant predictor of intrinsic motivation ( $\beta=0.742$ ,  $t=18.933$ ,  $p<0.001$ ) and job satisfaction ( $\beta=0.211$ ,  $t=2.035$ ,  $p<0.05$ ). Simultaneously, intrinsic motivation acts as a mediator within this correlation ( $\beta=0.186$ ,  $t=2.688$ ,  $p<0.05$ ). The results of the multi-group analysis reveal that categorical variables such as gender, age, job position, and employment status have a moderating effect on certain previously established relationships.

**Conclusion:** Increasing job satisfaction among healthcare professionals requires a balanced motivational complex encompassing both extrinsic and intrinsic motivators. Customized motivational tactics should be employed for certain cohorts of healthcare staff, considering their gender, age, job position, and employment status. Our findings expand the body of knowledge concerning the mechanisms underlying the relationship between motivation and job satisfaction in the healthcare industry. Additionally, the results offer relevant practical implications for healthcare managers in designing effective motivational and job satisfaction strategies.

**Keywords:** extrinsic motivation, intrinsic motivation, work-related outcomes, PLS-SEM approach, multigroup analysis

## Introduction

Attaining exceptional quality in healthcare calls for not only the acquisition of relevant knowledge and skills by healthcare personnel but also adequate motivation for the tasks they undertake. Developing highly motivated, skilled, and supported health workers is vital in advancing health in every health system and achieving national and universal health goals.<sup>1</sup> The motivation of healthcare professionals is frequently compromised as a result of elevated levels of stress. Healthcare personnel in Serbia encounter elevated levels of work-related stress, mostly attributed to their working environment. The state-funded medical institutes exhibit inadequate equipment and a shortage of skilled employees, resulting in a significant burden of labor. While the healthcare profession is inherently demanding, the working circumstances in Serbia for those in this field are notably challenging. In addition to well-recognized factors of professional stress, such as a high level of responsibility for human life, shift work, and unpredictability, the COVID-19 pandemic has introduced an extra stressor in blood bank facilities. Workers in

the transfusion medicine unit are subjected to exposure to many sources of infection, as well as chemical and biological agents, hence leading to an increased level of stress. The subject of motivation remains an ongoing important area of research in the field of management, consistently garnering the interest of scholars. The significance of this lies in its critical implications for the behaviors of workers, which can significantly impact the prosperity of a healthcare establishment.

The concept of work motivation refers to an individual's personal resource that can be classified into two distinct categories, namely intrinsic and extrinsic motivation. This classification, according to self-determination theory (SDT),<sup>2</sup> is founded on the distinction between sets of motives or objectives that activate behavior. In contrast to extrinsic motivation, intrinsic motivation is characterized as self-driven and it is connected with more positive effects on both well-being and performance. As noted by Ayalew et al, the efficacy of extrinsic motivators in promoting the long-term satisfaction and well-being of employees is comparatively inferior to the power of intrinsic motivation.<sup>3</sup> According to Ryan and Deci, intrinsic motivation might be described as an innate inclination to pursue new and challenging experiences, expand the use of one's abilities, engage in exploration, and acquire knowledge.<sup>4</sup> In this respect, intrinsic motivation pertains to engaging in an activity for inherent pleasure or enjoyment, while extrinsic motivation relates to taking part in an activity for the purpose of obtaining an economic reward.<sup>5</sup> Extrinsic motivation, stated as the inclination to participate in an activity with the intention of attaining favorable outcomes or evading unfavorable repercussions,<sup>6</sup> can exert varying effects on the work attitudes of employees. Paais and Pattiruhu claim that the level of job satisfaction is contingent upon both intrinsic and extrinsic motivational factors.<sup>7</sup> Individuals who possess intrinsic motivation are driven by self-fulfillment and are therefore satisfied with following the standards set by the organization.<sup>8</sup> When a person is intrinsically driven, on the other hand, he or she is inspired to act not by external cues, pressures, or incentives but rather by the joy or challenge that is involved in the activity.<sup>9</sup> However, according to research conducted by Đorđević et al and Ayalew et al, healthcare professionals tend to prioritize extrinsic motivation over intrinsic motivation.<sup>3,10</sup>

The relationship between motivation and job satisfaction is inversely influential and plays a significant role in forecasting the likelihood of healthcare employees leaving their jobs.<sup>11,12</sup> The literature frequently confuses motivation and job satisfaction as interchangeable terms. Despite their similarity, these concepts hold distinct characteristics and cannot be employed alternatively as synonyms. Spector discusses job satisfaction as the subjective perception of workers regarding their jobs and their various aspects, involving their sense of liking or disliking the work.<sup>13</sup> Prior studies have predominantly focused on examining the influence of job satisfaction on work motivation in the healthcare sector,<sup>14</sup> with comparatively less attention given to investigating the impact in the opposite direction.

A limited number of studies have documented the influence of motivation on job satisfaction within the healthcare industry. Notwithstanding, the existing studies exhibit significant inconsistencies in their findings, thereby requiring additional research to explicate the determinants that underlie the substantial disparities in the conclusions. Tang et al observed that a healthcare workplace which fosters intrinsic motivation and enhances work hours might prevent physician burnout and job dissatisfaction.<sup>15</sup> Additionally, the study conducted by Aroosiya et al established a positive correlation between the motivation levels and job satisfaction of healthcare professionals in Sri Lanka.<sup>16</sup>

Specific inconsistencies are associated with the impact of external motivation on employee satisfaction in the workplace. However, the concept of extrinsic motivation pertains to the workplace elements, such as social connections and incentives, and the absence of these aspects can result in a decline in employees' morale,<sup>17,18</sup> which may ultimately lead to a reduction in job satisfaction. Extrinsic motivation is a type of motivation that arises from an employee's anticipation of external resources, such as material rewards or verbal recognition from a superior when carrying out a task. In the case that these external resources become unavailable, there will be a potential for the employee to experience dissatisfaction. Based on the previous review, we developed the following hypotheses:

H1: Extrinsic motivation is positively associated with intrinsic motivation.

H2: Extrinsic motivation is positively associated with job satisfaction.

H3: Intrinsic motivation is positively associated with job satisfaction.

H4: Intrinsic motivation positively mediates the relationship between extrinsic motivation and job satisfaction.

Furthermore, we conducted an investigation to see whether gender, age, job position, and employment status have an impact on the previously postulated correlations. Prior studies have explored how demographic factors moderate the associations involving work motivation and job satisfaction. The variances in individuals' behavior can be attributed to significant factors, including demographic characteristics like age and gender.<sup>19</sup> The study conducted by Abdul Raziq et al investigated the potential moderating influence of gender on the relationship between job satisfaction and work motivation.<sup>20</sup> Hanafi and Syah explored whether there were moderating effects of gender and work duration on the relationship between job satisfaction, work motivation, work environment, and employee performance.<sup>21</sup> Furthermore, the study conducted by Štefko et al investigated the possible differences between genders in terms of employee motivation and job satisfaction within the context of Slovakia.<sup>22</sup> Kavanaugh et al conducted an analysis of the correlation between job satisfaction and demographic factors among healthcare professionals.<sup>23</sup> Similarly, the study performed by Seong and Hong aimed to examine the moderating impact of demographic factors, such as gender and age, on the correlation between motivation and satisfaction within the tourism industry.<sup>19</sup>

Our research incorporates job position and employment status in addition to demographic variables as moderating factors. Variations in the benefits and privileges afforded to employees by different job positions can give rise to divergent motivational mechanisms and corresponding impacts on job satisfaction. The reason for investigating the moderating impact of employment status pertains to the distinct circumstances in which permanent and non-permanent employees work. Specifically, as a means of regulating the number of individuals entering the healthcare sector, a considerable proportion of healthcare professionals are employed on a temporary basis, with their contracts being renewed for a predefined duration. That scenario entails a potential risk of job termination, which may lead to increased anxiety and have a detrimental impact on both employee morale and work attitudes, including motivation and job satisfaction.

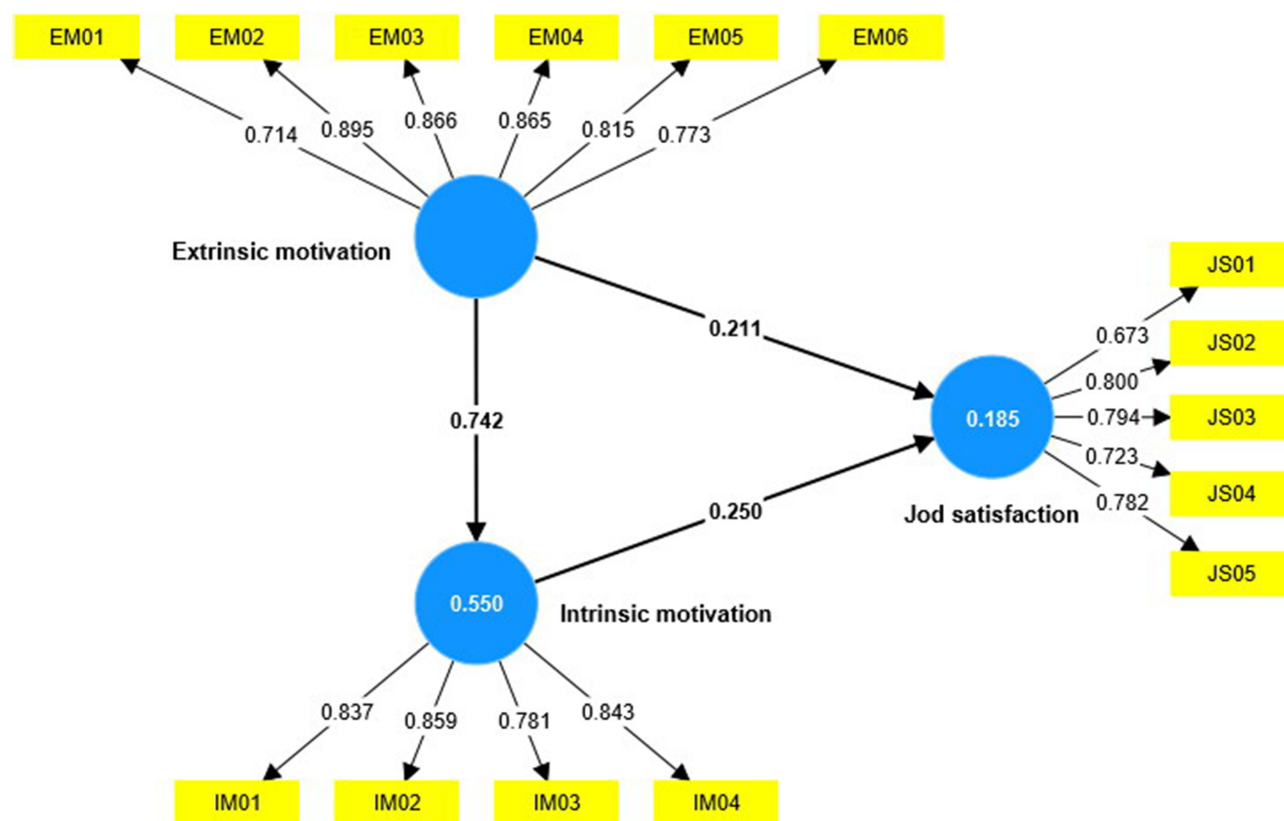
A prior study focused on examining the correlation between job satisfaction, work-related burnout, and personal burnout using a regression model.<sup>24</sup> However, a new research model has been devised to demonstrate the impact of the motivational complex on job satisfaction, with a particular emphasis on healthcare professionals' categories, using the partial least squares structural equation modeling (PLS-SEM) approach. The aim of the present study is to ascertain the basis of the correlation between extrinsic and intrinsic motivation and job satisfaction. Additionally, this study seeks to investigate the moderating impact of specific categorical variables on these associations. Further, this study examines the impact of gender, age, job position, and employment status on the relationship between both forms of motivation and job satisfaction. While the correlation between motivation and job satisfaction has been extensively researched, there is insufficient literature on this topic within the healthcare sector. Concurrently, there is a considerable scarcity of academic research that evaluates the effect of both forms of motivation on job satisfaction. Furthermore, to the best of our knowledge, no research has investigated the moderating impact of certain categorical variables on these relationships. Consequently, our methodology involves an initial validation of the model to determine whether, and to what extent, extrinsic and intrinsic motivation can be used to predict job satisfaction among healthcare professionals, thereby addressing the first research gap identified. Afterwards, the present study employs the partial least squares – multigroup analysis (PLS-MGA) approach, to address the second research gap. Specifically, the study explores the impact of multiple categorical variables on the relationship between extrinsic and intrinsic motivation and job satisfaction.

Figure 1 represents the applied research model.

## Materials and Methods

### Sampling Method and Procedures

The primary data for this study came from five public bank facilities in the central region of the Republic of Serbia. The size of the study population was 474. The blood banks in Belgrade have a staff of 367 healthcare professionals; the blood bank under the University Clinical Center in Kragujevac employs 66 healthcare professionals. The blood bank of the General Hospital in Čačak has 13 employees. The blood bank of the General Hospital in Kraljevo has 15 staff members, and the blood bank of Gornji Milanovac Health Center has 13 healthcare workers. For the purpose of this research, we elected to use a cross-sectional study design. In certain facilities, managers' permission was required before employees could participate in research. The study was approved by the Council of the Faculty of Medical Science, University of Kragujevac, on July 1, 2021 (reference number 01–7285 / 9–38). Furthermore, this study was conducted in accordance with the Declaration of Helsinki 1975 (revised in 2013) and its later amendments or equivalent ethical standards. Informed written consent was stated on the first page of the questionnaire. The



**Figure 1** The research model.

participants were informed that participation was voluntary, and their consent was implied by their completion of the questionnaire. Potential participants were kindly invited to complete printed copies of the questionnaire, but only on a voluntary basis and within their personal available time. At the outset of the anonymous questionnaire in the Serbian language, the research objectives were described to potential participants, and the confidentiality and anonymity of the obtained data were guaranteed. As an outcome of the procedure followed, the research comprises a consecutive sample of 218 respondents.

## Survey Instrument and Measurements

The structured questionnaire consisted of fifteen scaled statements and four demographic questions related to gender, age, level of education, and length of service. The participants expressed their level of agreement with the statements on a five-point Likert scale. Each of the variables was assessed with four to six statements sourced from pertinent literature and adapted to suit the research objectives and the Serbian setting. Regarding this, the scales employed were previously validated for their reliability across diverse contexts. Every statement was translated from English to Serbian and then adjusted for the purpose of this research. Motivation was assessed using the items extracted from the extended version of the Minnesota Satisfaction Questionnaire (MSQ).<sup>25</sup> According to Mardanov,<sup>26</sup> the items comprising the MSQ have the potential to be regarded as perceived motivators among employees. The measurement scale for job satisfaction was obtained from the Job Satisfaction Survey, which was designed by Paul Spector.<sup>27</sup> In order to assess job satisfaction, a set of 5 items was employed, comprising both positively and negatively worded statements.

## Profile of Respondents and Statistical Methods Employed

The sample structure is presented in Table 1. Based on the collected statistics, the predominant gender within the sample is female (66.5%). The age group over 40 years constitutes the larger proportion of the sample, accounting for 64.7%. Regarding educational background, participants with a high school or college diploma are the most numerous group (70.6%), with graduates constituting the subsequent group. In terms of job position, the sample is mainly comprised of

**Table 1** Sample Structure

Variables		Frequency	Percentage (%)
Gender	Male	73	33.5
	Female	145	66.5
Age	Under the age of 40	77	35.3
	Over 40 years old	141	64.7
Educational level	Elementary school	3	1.4
	High school or college	154	70.6
	Graduate	56	25.7
	Master or PhD	5	2.3
Job position	Nursing professionals	155	71.1
	Medical doctors	63	28.9
Employment status	Non-permanent employment	21	9.6
	Permanent employment	197	90.4

nursing professionals (71.1%), followed by medical doctors. The sample consisted of 197 individuals who held permanent employment status.

The initial step of statistical data processing involves conducting confirmatory factor analysis to assess the reliability and validity of the path model. After this, the structural model underwent evaluation through the use of the Smart PLS algorithm. The study examined the direct and indirect impacts of the observed variables. Following that, a multigroup analysis was performed.

## Results

### Measurement Model

Prior to implementing SEM, the researchers employed confirmatory factor analysis to verify the extent to which the measurements accurately reflected the constructs in this research. A comprehensive list of indicators that were used to assess the reliability and validity of a research model is presented in Table 2. By assessing the convergent validity of the data, all of the loadings of the items were found to be higher above the acceptable level of 0.60. The research model did not exhibit any concerns regarding multicollinearity as all variance inflation factor (VIF) values were less than 5.<sup>28</sup>

**Table 2** Measurement Model and Constructs

Construct and Item Description	Convergent Validity	VIF	Composite Reliability	$\alpha$	AVE
EM: Extrinsic Motivation			0.913	0.904	0.679
EM01: My pay and the amount of work I do.	0.714	1.842			
EM02: The way company policies are put into practice.	0.895	3.515			
EM03: The way my boss handles his/her workers.	0.866	4.570			
EM04: The competence of my supervisor in making decisions.	0.865	4.607			
EM05: The chances for advancement on this job.	0.815	2.313			

(Continued)

**Table 2** (Continued).

Construct and Item Description	Convergent Validity	VIF	Composite Reliability	$\alpha$	AVE
EM06: The praise I get for doing a good job.	0.773	2.139			
IM: Intrinsic Motivation			0.852	0.850	0.690
IM01: The chance to work alone on the job.	0.837	2.747			
IM02: The chance to do something that makes use of my abilities.	0.859	2.947			
IM03: The chance to do different things from time to time.	0.781	2.003			
IM04: The chance to try my own methods of doing the job.	0.843	2.409			
JS: Job Satisfaction			0.828	0.813	0.572
JS01: My job is enjoyable.	0.673	1.362			
JS02: Communication seems good within this organization.	0.800	2.070			
JS03: Work assignments are not fully explained. (R)	0.794	1.830			
JS04: I do not feel that the work I do is appreciated. (R)	0.723	1.735			
JS05: I like doing the things I do at work.	0.782	1.848			

**Abbreviations:** VIF, variance inflation factor; AVE, average variance extracted.

The composite reliability values showed a range of 0.828 to 0.913, far exceeding the recommended threshold of 0.7. The Cronbach's alpha coefficient has been calculated for each construct, and the findings suggest that the variables hold an acceptable level of internal consistency, as the minimum threshold of 0.7 has been exceeded. The results of the study suggest that convergent validity has been established, as all the average variance extracted (AVE) values were found to be greater than 0.5, which aligns with the criteria proposed by Hair et al.<sup>29</sup>

The verification of discriminant validity was performed based on the heterotrait–monotrait (HTMT0.90) criterion suggested by Henseler et al.<sup>30</sup> Table 3 displays the values obtained from the analysis. The maximum value of 0.836 indicates that our measurement model had satisfactory discriminant validity.

## Structural Model

For the evaluation of the structural model, the Smart PLS algorithm was implemented. According to the path values for direct effects, which are provided in Table 4, it is determined that extrinsic motivation had a major positive influence on intrinsic motivation ( $\beta=0.742$ ,  $p<0.001$ ). The analysis also shows that job satisfaction is positively predicted by both extrinsic motivation ( $\beta=0.211$ ,  $p<0.05$ ) and intrinsic motivation ( $\beta=0.250$ ,  $p<0.01$ ) at approximately equal levels.

Table 4 presents the evidence for the indirect effect. The presence of intrinsic motivation has been determined to act as a mediator in the correlation between extrinsic motivation and job satisfaction. For evaluating the quality of the structural model, the cross-validated Redundancy Index (Stone–Geisser's  $Q^2$ ) was used. It was calculated using the blindfolding option in PLS. All  $Q^2$  values fall within the positive range, indicating a structural model of excellent quality and sufficient predictive relevance. The  $R^2$  coefficient indicates that the model accounts for 55% of the variance in

**Table 3** Discriminant Validity (HTMT0.90 Criterion)

Constructs	1	2	3
1. EM: Extrinsic Motivation	–		
2. IM: Intrinsic Motivation	0.836		
3. JS: Job Satisfaction	0.443	0.474	–



**Table 4** Results of Testing Direct Effects

Relationship	Path Coefficient	t-Value	95% CIs (Bias Corrected)	Results
H1: EM → IM	0.742***	18.933	[0.665, 0.796]	Supported
H2: EM → JS	0.211*	2.035	[0.035, 0.371]	Supported
H3: IM → JS	0.250**	2.688	[0.079, 0.395]	Supported

Notes: \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001. p, significance level.

Abbreviations: CI, confidence interval; EM, extrinsic motivation; IM, intrinsic motivation; JS, job satisfaction.

extrinsic motivation and 18.5% of the variance in job satisfaction. The standardized root mean square residual (SRMR) was additionally used to evaluate the model's fit to our data. The findings indicate that the SRMR of the model is 0.082, which is in close proximity to the maximum acceptable value of 0.08 as suggested by Hu and Bentler.<sup>31</sup> Using the formula  $\sqrt{(R^2 \times \text{Stone-Geisser } Q^2)}$ , the Goodness-of-fit Index (GOF) was calculated. Both values presented in Table 5 fall within the acceptable range of 0–1.

The results of PLS-MGA path modeling are presented in Table 6. We conducted a comparative analysis of the path coefficients between distinct groups categorized based on the following factors: gender, age, job position, and employment status. Two groups were formed based on each criterion. Therefore, the present study investigated the potential

**Table 5** Results of Testing Indirect Effects

Relationship	Path Coefficient	t-Value	95% CIs (Bias Corrected)	Results
H4: EM → IM → JS	0.186**	2.602	[0.064, 0.305]	Supported
	Stoner-Geisser $Q^2$	$R^2$	GOF	
Intrinsic Motivation	0.537	0.550	0.543	
Job Satisfaction	0.142	0.185	0.162	
SRMR	0.082			

Note: \*\*p < 0.01.

Abbreviations: CI, confidence interval; EM, extrinsic motivation; IM, intrinsic motivation; JS, job satisfaction,  $R^2$  – coefficient of determination; GOF, goodness-of-fit-index; SRMR, standardized root mean square residual.

**Table 6** Results of Testing Direct Effects: Multigroup Partial Least Squares Path Modeling

Relationship	Path Coefficient	p-value	Path Coefficient	p-value	Invariant
	Female	Female	Male	Male	
EM → IM	0.738	0.000***	0.748	0.000***	Yes
EM → JS	0.358	0.002**	−0.014	0.954	No
IM → JS	0.156	0.129	0.421	0.034*	No
	Age < 40	Age < 40	Age > 40	Age > 40	
EM → IM	0.722	0.000***	0.757	0.000***	Yes
EM → JS	0.287	0.159	0.210	0.097	Yes
IM → JS	0.160	0.412	0.315	0.005**	No

(Continued)

**Table 6** (Continued).

Relationship	Path Coefficient	p-value	Path Coefficient	p-value	Invariant
	Medical doctors	Medical doctors	Nursing professionals	Nursing professionals	
EM → IM	0.863	0.000***	0.707	0.000***	Yes
EM → JS	0.514	0.025*	0.187	0.167	No
IM → JS	-0.008	0.966	0.287	0.012*	No
	Non-permanent employment	Non-permanent employment	Permanent employment	Permanent employment	
EM → IM	0.643	0.000***	0.738	0.000***	Yes
EM → JS	0.502	0.054	0.190	0.091	Yes
IM → JS	0.172	0.486	0.247	0.012*	No

Notes: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .  $p$  – significance level.

Abbreviations: EM, extrinsic motivation; IM, intrinsic motivation; JS, job satisfaction.

impact of gender, age, job position, and employment status on the strength of the relationships that were previously examined.

When considering gender differences, the impact of extrinsic motivation on intrinsic motivation remains significant in both subsamples. The influence is marginally more prominent in men ( $\beta=0.748$ ;  $p<0.001$ ). The impact of extrinsic motivation on job satisfaction is significant in the subsample comprising women ( $\beta=0.358$ ,  $p<0.01$ ); however, it lacks statistical significance in the subsample comprising men. This implies that the relationship between extrinsic motivation and job satisfaction is moderated by gender differences. The study findings also indicate that the influence of intrinsic motivation on job satisfaction is significant among male participants ( $\beta=0.421$ ,  $p<0.05$ ), whereas it is not significant in the female subsample.

The present study examined the relationships among the observed variables in two independent cohorts of healthcare professionals, divided by age group, specifically individuals under the age of 40 years and those over the age of 40 years. The impact of extrinsic motivation on intrinsic motivation is statistically significant in both observed subsamples ( $p<0.001$ ), indicating that this path is invariant for the two groups of participants. The impact of extrinsic motivation on job satisfaction fails to produce significant results in either the subsample comprising individuals under 40 years of age or the subsample comprising individuals over 40. Conversely, intrinsic motivation has a significant effect on job satisfaction among the elderly ( $\beta=0.315$ ;  $p<0.01$ ), but not among those under 40 years of age. This suggests that the relationship between intrinsic motivation and job satisfaction is influenced by variations in age.

The sample was split based on the job position, with subsamples consisting of medical doctors and nurses. The findings indicate that the impact of extrinsic motivation on intrinsic motivation is significant in both subsamples. According to the results presented, the impact of extrinsic motivation on intrinsic is significant in both subsamples ( $p<0.001$ ). The correlation between extrinsic motivation and job satisfaction remains significant in the subsample of medical doctors ( $\beta=0.514$ ,  $p<0.01$ ), while no significant association between the two variables was observed among nurses. In contrast, the impact of intrinsic motivation on job satisfaction persists as a significant factor within the subsample of nurses ( $\beta=0.287$ ;  $p<0.05$ ); however, there is no statistical significance observed among medical doctors. In this respect, the paths between motivation and job satisfaction are moderated by job position.

Two distinct categories of employment can be distinguished based on job permanency: permanent and non-permanent employment. The impact of extrinsic motivation on intrinsic motivation is significant in both cohorts at a level of  $p<0.001$ , with a more pronounced effect observed among individuals classified as permanent employees ( $\beta=0.738$ ). Thus, intrinsic motivation for permanent employment staff appears to be slightly more affected by extrinsic motivation than for non-permanent employees. At the same time, the influence of extrinsic motivation on job satisfaction



seems to be insignificant for both permanent and non-permanent healthcare workers. The study found that intrinsic motivation has a positive impact on job satisfaction, but only among permanent employees ( $\beta=0.247$ ;  $p<0.05$ ). This suggests that the relationship between intrinsic motivation and job satisfaction is moderated by employment status.

## Discussion

The findings of the research indicated that extrinsic motivation serves as an antecedent to intrinsic motivation, hence providing confirmation for hypothesis H1. This indicates that intrinsic motivators are driven by hygiene factors, including compensation and acknowledgement from superiors. This suggests that healthcare professionals who are driven by extrinsic motivation, such as the desire for rewards or the avoidance of punishment, are also more inclined to engage in their work for the sake of inherent satisfaction. It is anticipated that extrinsic motivators are indicative of fundamental requirements, referred to as hygiene elements, which must be fulfilled in order to initiate inner motivation. The findings of this study reveal that extrinsic motivation has a positive significant impact on the job satisfaction of healthcare professionals, confirming hypothesis H2. This finding suggests that healthcare employees' satisfaction is dependent on variables such as salary, management practices, superiors' competence level, and opportunities for promotion when they are motivated by these factors. Put differently, individuals experience an elevation in their level of job satisfaction when they are driven by external factors. Another result shows that intrinsic motivation is a significant predictor of job satisfaction, confirming hypothesis H3. This research indicates that individuals who are motivated by autonomy, a feeling of purpose, and excellence in their work are more likely to have higher levels of job satisfaction. It is also determined that intrinsic motivation acts as a mediator in the relationship between extrinsic motivation and job satisfaction. Thus, hypothesis H4 was also confirmed. This implies that the relationship between extrinsic motivation and job satisfaction is partially dependent on intrinsic motivation. This implies that the association between extrinsic motivation and job satisfaction is contingent upon the level of intrinsic motivation. The inclusion of intrinsic motivation into the relationship between extrinsic motivation and job satisfaction modifies the magnitude of the correlation between these two variables. When intrinsic motivation is integrated into the analysis, the path remains statistically significant. However, the path coefficient is seen to decrease, suggesting the presence of a complementary mediating impact. This suggests that the lack of external incentives might be countered by internal drive in employees, so enabling them to maintain job satisfaction. Regarding the outcomes of the multigroup analysis, it was discovered that certain categorical variables served as moderators for the previously investigated relationships.

The path from extrinsic motivation to intrinsic motivation was found to be invariant between all groups based on all separation criteria applied. The correlation between extrinsic motivation and job satisfaction is prone to gender moderation, as well as the relationship between intrinsic motivation and job satisfaction. The statistical analysis reveals that extrinsic motivation holds greater significance for women, whereas intrinsic motivation has a more pronounced impact on men. These findings suggest that male individuals exhibit higher levels of job satisfaction when they are afforded autonomy in the workplace, opportunities to use their skill sets, engaging job roles, and the ability to independently choose their work methods. In contrast, women are more influenced by a tangible aspect, which encompasses factors such as remuneration, job demands, the approach of superiors towards subordinates, their ability to make decisions, and recognition for exemplary performance.

The impact of extrinsic motivation on intrinsic motivation is significant for individuals both below and above the age of 40 years. However, no significant relationship was found between extrinsic motivation and job satisfaction between the two age groups. The findings indicate that the general model, which examines the relationship across the entire sample, reveals a significant influence. However, the efficacy of extrinsic motivation in attaining job satisfaction is dubious, as other factors may affect this relationship and leave it statistically insignificant. The study indicates that the job satisfaction of employees aged 40 years and above is significantly influenced by extrinsic motivation, whereas intrinsic motivation does not have a statistically significant impact on the job satisfaction of employees below 40 years of age. The present study reveals a cumulative effect in which neither extrinsic nor intrinsic motivation significantly impacts job satisfaction among employees under 40 years of age. This suggests that either certain needs remain ignored or external factors hold greater influence, thereby indicating that non-work-related motives exert a dominant influence on individual behavior and, consequently, job satisfaction.

The analysis based on job position reveals that extrinsic motivation has a strong significant impact on intrinsic motivation in both subsamples. The impact of extrinsic motivation on job satisfaction was significant among medical doctors. However, it failed to show a significant influence in the subsample of nursing professionals. Conversely, a significant correlation was observed between intrinsic motivation and job satisfaction among nursing professionals, but not among medical doctors. The present study draws the conclusion that medical doctors place greater significance on tangible material benefits in comparison to nursing professionals, who tend to receive greater job satisfaction from non-material factors. Possible explanations for this phenomenon could be attributed to the comparatively higher remuneration of medical doctors in contrast to nurses. The societal perception that the compensation level for medical doctors should exceed the average salary may create higher expectations among their family members. Consequently, medical practitioners prioritize extrinsic factors to a greater extent. According to official statistical reports, nursing professionals receive a salary that is approximately average. Moreover, this observation may suggest the possibility of medical doctors showing less empathy in their interactions with patients compared to nursing professionals, a point that requires further investigation.

The study found that job satisfaction is not influenced by extrinsic motivation for both permanent and non-permanent employees. However, intrinsic motivation has a significant impact on job satisfaction, but only for permanent employees. The potential explanation may be related to the everlasting anxiety of job loss experienced by non-permanent employees. According to Mahmoud et al,<sup>32</sup> employees who experience job insecurity face the challenge of balancing the need to protect their employment while meeting their job responsibilities. The experience of job insecurity can lead to a sense of detachment among employees, obstructing their ability to pursue intrinsic motivation.; This is due to the stress and loss of autonomy that often accompany job insecurity, as well as the need to prioritize job preservation.<sup>4</sup> Consequently, neither extrinsic nor intrinsic motivational factors appear to significantly influence job satisfaction. Further investigation is necessary to determine whether the complex relationship between extrinsic and intrinsic motivations and job satisfaction is altered when transitioning from non-permanent to permanent employment. Besides, considering the lack of statistically significant impact of both extrinsic motivation and intrinsic motivation on job satisfaction among employees under the age of 40 years, further investigation should be focused on identifying the structure of employees engaged in non-permanent employment. The implicit assumption of this study is that the majority of non-permanent workers fall within the age bracket of under 40 years.

## Conclusion

Our study empirically examined a path model between extrinsic motivation and job satisfaction via intrinsic motivation as a mediator. We found that intrinsic motivation exerted the indirect effect of extrinsic motivation on job satisfaction. We expanded prior research on the motivation and job satisfaction relationship by examining the impact of multiple differences, including gender, age, position, and employment status differences. Finally, our multigroup analysis reveals the existence of some significant variations between the observed groups.

The present research offers valuable practical implications. Effective management of distinct group variations can result in increased employee motivation, leading to greater job satisfaction and potentially influencing the overall quality of the work environment. In contemporary times, there is an increasing amount of diversity in the workplace. Consequently, comprehending variances in gender, age, and other demographic and contingency factors is progressively imperative in upholding greater levels of job satisfaction among healthcare personnel. It is imperative to avoid gender, age, and other stereotyping of workers, and instead focus on enhancing their satisfaction and well-being by acknowledging and addressing the unique differences that exist among various groups. There is a definite need for managers to engage in interactions with their employees, which would establish work as a positive and enjoyable experience. The findings indicate that tailored motivational strategies should be implemented for distinct cohorts of healthcare personnel based on their gender, age, job position, and employment status.

Considering the constraints of the study's data collection process, it would be advisable to reassess the interaction between motivation and job satisfaction across multiple groups in different geographical locations. Furthermore, the incorporation of multicultural adjustments into the model is expected to improve our comprehension of the underlying mechanisms that drive the influence of motivation on job satisfaction across diverse cultural contexts. This study

compares proposed paths between two groups for every single criterion. Future research may expand upon the aforementioned classification criteria and examine distinctions across a greater number of groups. Moreover, it may be appropriate to include additional categorical variables. Given that income level can potentially affect the dominant motivators within an individual's motivational framework, it would be beneficial to investigate the variances in the effects of extrinsic motivation and intrinsic motivation (1) on job satisfaction across cohorts with varying levels of personal income per household member.

## Disclosure

The authors report no conflicts of interest in this work.

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