

Original Research

# The mediating effect of job autonomy and depression on the relationship between the leaders' roles and employees' job satisfaction according to employment type

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Submitted: 19 April 2021 Accepted: 2 July 2021 Available online: 18 September 2021 Published: 9 February 2022

## Abstract

**Background and objective:** Today, the roles of leaders and employees have become crucial for corporate performance, with leaders having a significant effect on employees. This study aimed to analyze leaders' effect on employees' job satisfaction. It also aimed to analyze the effect of employees' depression and job autonomy on the relationship between leaders' roles and employees' job satisfaction by employment type. **Materials and methods:** In total, 24,327 cases from the 5th Korean Working Conditions Survey were analyzed; the established hypotheses were tested using partial least squares structural equation modeling. **Results:** In both regular and non-regular employees, the leader's role had a positive effect on job satisfaction. Job autonomy and depression had a mediating effect. The effect of the leader's role on job autonomy was greater in regular employees compared to non-regular employees; however, the effect of the leader's role on depression was greater in non-regular employees. **Conclusions:** For non-regular employees, the expansion of job autonomy is limited due to the nature of their work. This implies that the greater focus of leaders should be on reducing depression resulting in increasing employees' job satisfaction. For regular employees, the leaders' focus should be on expanding job autonomy, which will be effective in increasing employees' job satisfaction.

**Keywords:** Leader role; Job satisfaction; Depression; Job autonomy; Employee

## 1. Introduction

Corporate businesses face significant competition to survive in a rapidly changing environment. In such circumstances, employee relationships are an important factor for corporate survival. In the modern age, companies place greater value on the roles of leaders and employees in the assessment of corporate performance [1,2]. Leaders play an important role in guiding an organization and achieving performance goals. For businesses to thrive in a changing environment, it is essential for leaders to proactively respond to the organizational environment and improve performance by increasing employee competency [3]. Various management techniques have been introduced to achieve corporate goals and improve employee performance, and there have always been concerns about new leadership. Therefore, effective leadership is considered a topic of interest by researchers, regardless of the organization type.

Leaders have a significant effect not only on employee performance but also on organizational performance [4]. Employees perceive their leaders as competent when the latter can solve problems at work, and this perception is important in fostering an attitude of trust and reliance on leaders among employees [5]. Employees' perception of their leaders' competency enables them to focus on their jobs and leads to better job performance [6,7]. Moreover, employees who receive support from their leaders tend to

be more proactive and adapt well to the organizational culture [8]. Thus, an organizational leader's competency is essential for achieving organizational goals [9]. The leader's role has been shown to be consistently and strongly correlated with variables, such as employee job satisfaction [10]. Further, leaders' consideration and support have a positive effect on employees' attitudes and job satisfaction [11,12].

Although leaders play an important role in organizational performance, employee job satisfaction also significantly influences performance. Indeed, businesses have begun making considerable efforts to improve employee job satisfaction [13]. Employee job satisfaction is linked to customer satisfaction, and thus, the former influences organizational performance both directly and indirectly [14]. As of 2016, in Korea the annual average working hours per person was 2069 hours, ranking second among OECD countries [15]. In addition, 53.7% of the employees in Korea reported that they felt pressured while working, indicating that job stress is serious for Korean employees [15]. Employees' job stress has been reported to lead to job dissatisfaction and ultimately to a decrease in corporate productivity [16]. Hence, employees' work environment significantly affects not only the individual employees, but also their families, companies, and society, therefore, it is necessary to pay more attention to them.

Some factors that affect employee job satisfaction are job autonomy and depression [17]. In today's competitive



environment, depression among employees not only affects their job satisfaction but also becomes a social problem [17]. According to the Canadian Community Health Survey, 3.7% of employees aged 25–64 experienced depression, with a higher prevalence in women than in men (5.1% vs. 2.6%, respectively) [18]. The findings of the National Comorbidity Study conducted in the United States revealed that 6.4% of employees met the criteria for 12-month major depressive disorder [17]. In Korea, a study found that 7.4% of employees experience depression, and 72.2% of those working in a state of depression demonstrated symptoms of cognitive impairment [19]. Depression in the workplace leads to significant economic loss for both individuals and businesses [20,21]. The economic cost of depression in the United States in 2000 was estimated to be \$ 83.1 billion [22], and that in Europe accounted for 1% of the GDP of all European countries [23]. Further, the cost of employees losing their ability to work in Korea was found to be equivalent to 26% of the individuals' wages [24]. Employees' depression lowers work efficiency by reducing their focus, decision-making abilities [19], and task execution, thereby leading to reduced performance and productivity [25], increased absenteeism and turnover, and wasted organizational resources [26].

Today, as the uncertainty in the business environment and competition among companies intensify, it is important for employees to secure sustainable competitiveness by actively and creatively responding to environmental changes [27]. Employees with high job autonomy have higher job satisfaction; thus, they have high self-esteem and positive trust in their organization [27]. Employees' trust in their organization increases fellowship and teamwork and contributes to the improvement of organizational performance by enhancing cooperative attitudes [27]. Therefore, improving employees' job autonomy is an important point of concern.

Numerous studies have examined the relationship between leader roles and employee job satisfaction—an important factor from a human resource perspective—as well as the relationships between job satisfaction and the factors that influence it, such as job autonomy and depression [28,29]. Nevertheless, there are limitations to the generalizability of previous findings, as several studies were restricted to specific occupations and groups [30,31]. Furthermore, few studies have investigated the various associations in the leader-employee relationship according to employment type.

Although there are several types of employment that significantly contribute to organizational performance, they can generally be categorized as regular and non-regular employment. Regular employees refer to full-time employees under a permanent labor contract. Thus, employees who are not regular workers are considered non-regular employees, such as those who have signed a labor contract with a dispatch agency, others who have signed a fixed-term la-

bor contract, and part-time employees [32]. Nowadays, the proportion of non-regular employees is increasing worldwide. In Korea, for instance, the proportion of non-regular employees increased from 33% in 2018 to 36.4% in August 2019 [33]. Non-regular employees are more prone to job instability and job stress due to poor working conditions, such as low wages, long working hours, excessive workload, and low job autonomy compared to regular employees, which increases the likelihood of mental health problems, such as depression [34]. Poor working conditions have been found to lead to lower job satisfaction among non-regular employees compared to regular employees [35]. Therefore, there is a need for studies on job satisfaction among regular and non-regular employees alike.

Hence, this study aimed to analyze leaders' roles in employee job satisfaction, job autonomy, and depression according to the type of employment based on data from a Korean nation-wide survey. It also explored the mediating role of employees' depression and job autonomy on the relationship between the leader's role and employee job satisfaction.

## 2. Literature review and hypotheses development

### 2.1 Leader role and job satisfaction

There has been considerable research on corporate leaders, as they play an important role in employees' job satisfaction and organizational growth. The role of the leader is also expressed as leadership, in that the leader interacts with the employees to influence and motivate employees to achieve organizational goals. In other words, the role of a leader is demonstrated through their leadership style. Leadership types can be divided into transformational, transactional, emotional, fun, and servant leaderships. In transformational leadership, the leader provides the utmost autonomy to employees, enabling them to use their own judgments in performing their duties; this type of leadership is characterized by employees' trust in the leader [36,37]. On the other hand, in transactional leadership, the leaders use individual rewards and punishment to increase job performance [37,38]. Transformational leadership differs from transactional leadership as the former involves motivation through shared vision, whereas the latter involves motivation through rewards [39]. Whether transformational or transactional, the role of leaders is to achieve organizational goals and high performance through their interactions with the employees. Support from leaders is seen to have a positive effect on employees' job performance and satisfaction [40]. Transformative leadership was found to have a significant effect on social workers' job satisfaction, and the transformational leadership of small and medium-sized business' managers was found to have a significant effect on employees' job satisfaction [41,42]. Emotional leadership can be defined as a technique, influence, or process in which organizational members naturally form

emotional stability and work voluntarily and passionately to achieve organizational goals [43]. School principals' emotional leadership was found to be correlated with teachers' job satisfaction, and small and medium-sized business managers' emotional leadership and their employees' job satisfaction were also correlated [44,45]. Fun leadership was defined as a leader's skill that induces members of the organization to maximize organizational performance by considering self-esteem, fun, and enjoyment related to their work [46]. In a study on the hotel industry, it was found that fun leadership had an effect on employees' job satisfaction [47]. Servant leadership is a leadership that respects the organization's members and helps them grow by providing them with opportunities to show their creativity and by leading them to form a true community [48]. According to several studies, servant leadership was found to have a significant effect on job satisfaction [49,50]. Although there are various types of leadership, there is a correlation between leadership and job satisfaction. As the job satisfaction of employees is linked to organizational performance, the role of the leader is important to create conditions for higher employee job satisfaction.

The concept of job satisfaction has been defined in various ways, which makes it difficult to arrive at a consensus on a single definition [51,52]. Despite the subjective and multidimensional nature of job satisfaction, it can commonly be defined as the degree of employees' satisfaction with their work [53]. Generally, higher job satisfaction enables efficient job-related learning, a more proactive and cooperative attitude toward corporate clients and colleagues. Thus, employees' job satisfaction leads to client satisfaction [54]. Several studies have demonstrated the effect of the leader's role on employee job satisfaction. For example, the transactional leadership of the directors of daycare centers acted as a moderating factor and was observed to have a positive effect on daycare teachers' job satisfaction. Additionally, the transformational leadership of school principals was observed to have a positive effect on staff job satisfaction [55]. Transformational leadership was also found to positively affect job satisfaction in other occupations, such as the police force [56], university staff [57], and local government employees [58].

There are several differences in the general characteristics of regular and non-regular employment types, such as the tenure, work hours, and wages. Non-regular employees are generally considered to have poorer working conditions than regular employees [59], and poor working conditions influence their job satisfaction, as shown by several studies [35,60,61]. Overall, although there is a difference in employee job satisfaction based on employment type, a leader's role can influence the job satisfaction of both regular and non-regular employees. Thus, the following hypothesis was proposed:

**Hypothesis 1 (H1):** The role of the leader will have a positive effect on employee job satisfaction in each type of employment.

## 2.2 Job autonomy

Job autonomy refers to the scope of freedom, independence, and discretion granted to employees in deciding on the procedure and method used to accomplish their duties; it is determined by employees' right to perform their duties independently and autonomously [62]. Job autonomy is an important factor that influences the employees' motivation and attitudes [63]. Providing greater job autonomy to employees (i.e., more independence in judgment and decision-making) fosters a greater sense of responsibility, and drive for growth and self-realization among employees, thereby contributing to improved job satisfaction [53]. Greater job autonomy leads to employees' greater perception of control over procedures and plans as well as a sense of self-achievement, which leads to greater self-esteem and perception of success [64]. Greater job autonomy was shown to be accompanied by higher job satisfaction, organizational commitment, and performance and motivation levels; job autonomy was closely associated with job satisfaction compared to other factors [65,66]. In a study on employees in the service industry, high job autonomy was also found to decrease the risk of suicide [67]. Furthermore, greater job autonomy strengthens intrinsic motivation and thus increases job satisfaction [68]. Job autonomy not only improves employees' participation in decision-making but also influences the solidarity among employees [69]. Job autonomy is a decisive factor in promoting self-determination, and prior research has indicated that those working in autonomous settings feel satisfied with their job, enough to improve organizational performance [70].

Previous findings have revealed that leadership has a positive effect on job autonomy and managerial trust [71,72]. Moreover, authentic leadership has been found to be a variable associated with employees' innovative behaviors, in which internalized moral values, relational transparency, and balanced information processing influence employee autonomy [73]. This fact implies that the role of the leader affects job autonomy and that job autonomy in turn can affect job satisfaction. It also implies that job autonomy can have an effect on the relationship between the leader's role and job satisfaction. Based on this implication, the following hypotheses were proposed:

**Hypothesis 2 (H2):** The role of the leader will have a positive effect on employee job autonomy in each type of employment.

**Hypothesis 3 (H3):** Employee job autonomy will have a positive effect on employee job satisfaction in each type of employment.

**Hypothesis 4 (H4):** The role of the leader will have a positive effect on employee job satisfaction by mediating job autonomy in each type of employment.

### 2.3 Depression

Depression is a mental disorder in which physical and cognitive changes accompany feelings of sadness, emptiness, and intense emotions that significantly affect an individual's ability to function [74,75]. Severe or persistent depression can significantly impair physical, psychological, and social functions, and can create feelings of helplessness that lead to tendencies, such as suicidal behavior [76]. Depression has been reported as a factor that reduces job satisfaction [77] and affects employee burnout, thereby negatively influencing organizational commitment and job satisfaction [78].

In a study of bankers, it was found that there was a negative correlation between emotional leadership and employees' depression [43]. Similarly, a study that was conducted on hotel managers found that employees' depression decreased when the hotel managers employed either the fun or servant leadership style [79]. These studies indicate that depression is closely related to the leader's role.

A study on the healthcare employees of the Medical Sciences University of Fasa, in 2020, showed that decreasing depression increased employees' level of job satisfaction, which led to an increase in productivity and quality of work [80]. Additionally, a study that analyzed the relationship between depression and job satisfaction of childcare teachers, found that the lower the depression, the higher the job satisfaction [81]. Furthermore, a study on nurses in the Dhaka medical college and hospital showed that there was a negative correlation between depression and job satisfaction [82]. Therefore, depression is an important factor that affects employees' job satisfaction.

The factors that influence depression include not only socioeconomic characteristics, such as gender, age, education, income, employment status, marital status, and private medical insurance but also subjective health and smoking habits [83,84]. Moreover, job stress is a major factor in depression. Depression is the most representative characteristic response to stress; it has a high positive correlation with stress [85,86]. The leader can play an important role in moderating the job stress of employees [35,87]. Furthermore, in a study that analyzed the relationship between depression and job stress—where job demand, job autonomy, job security, organization system, and a lack of rewards were the sub-factors of job stress—job autonomy was found to have a direct correlation with depression [88].

Based on the literature review, there were correlations between the leader's role and employees' job satisfaction, depression, and job autonomy. In addition, depression was negatively correlated with job satisfaction and job autonomy. This implies that there are correlations among the leader's role, job autonomy, depression, and job satisfaction. It also implies that job autonomy and depression can have an effect on the relationship between the leader's role and job satisfaction. Based on these implications, the following hypotheses were proposed:

**Hypothesis 5 (H5):** The role of the leader will have a negative effect on depression among employees in each type of employment.

**Hypothesis 6 (H6):** Depression among employees will have a negative effect on employee job satisfaction in each type of employment.

**Hypothesis 7 (H7):** Employees' job autonomy will have a negative effect on depression among employees in each type of employment.

**Hypothesis 8 (H8):** The role of the leader will have a positive effect on the job satisfaction of employees by mediating employees' depression in each type of employment.

**Hypothesis 9 (H9):** The role of the leader will have a positive effect on employees' job satisfaction by mediating employees' job autonomy and depression in each type of employment.

**Hypothesis 10 (H10):** Employees' job autonomy will have a positive effect on employees' job satisfaction by mediating their depression in each type of employment.

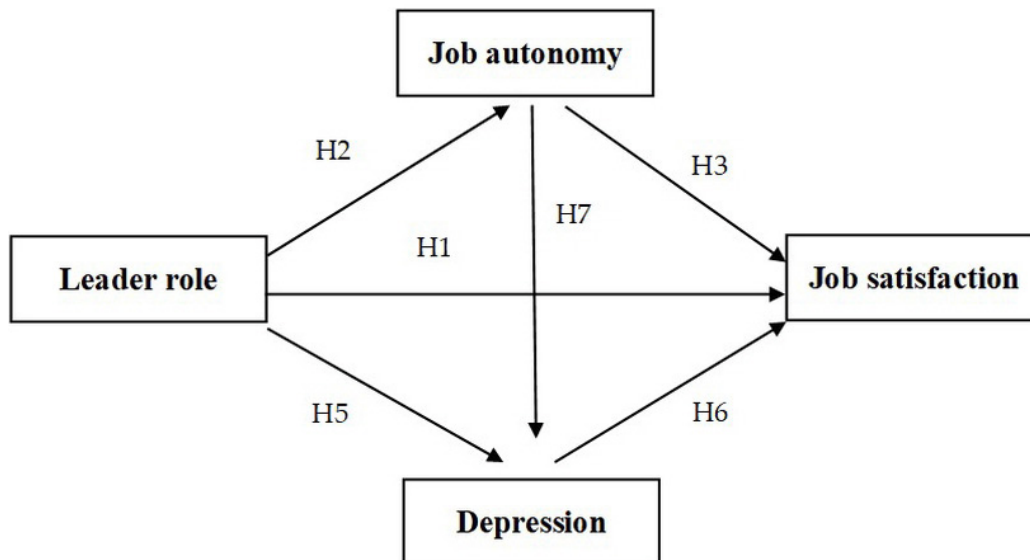
A model of the mediating effect of job autonomy and depression on the effect of the leader's role on job satisfaction in each type of employment is presented in Fig. 1.

## 3. Materials and methods

### 3.1 Data collection

This study utilized data from the 5th Korean Working Conditions Survey (KWCS) conducted in 2017. The KWCS is conducted every three years and is based on the European Working Condition Survey conducted by Eurofound. The 5th KWCS was held through one-on-one household interviews in which a professionally trained researcher visited employed individuals aged 15 or older. Sampling was done as follows: First, the survey areas were extracted using the probability proportional to size sampling method. Second, the households were extracted from the survey areas using the systematic sampling method, then, one person, from each household, who met the criteria was selected. A total of 5300 survey areas were selected and 10 households were selected from each survey area. The final sample included 52,205 participants. The KWCS, which is considered as Korea's official data set regarding working conditions, is conducted by the Korea Occupational Safety and Health Agency, and the data are available to everyone for use.

Though KWCS' data includes both employees and employers, this study used only employees' data. Of the 52,205 participants in the 5th KWCS, those with employment were extracted; among these, participants with missing questionnaire data were excluded. Thus, the data of 24,327 participants were used for this study, of which 19,506 (80.2%) were regular employees and 4821 were (19.8%) non-regular employees. The results of the analysis of the 24,327 employees, surveyed across Korea, can be considered to be reflective of the characteristics of Korean employees. The demographic characteristics of these



H4, H8, H9, H10: Hypotheses for testing mediating effects

Fig. 1. Research framework.

participants are listed in Table 1. Although there was a higher proportion of men (52.1%) than women (47.9%) among regular employees, a higher proportion of women (59.7%) than men were observed among non-regular employees (40.3%). Those aged 40–49 years accounted for the largest proportion of regular employees (29.2%), whereas those aged 60 or older were the most common among non-regular employees (32.4%). Furthermore, university graduates or higher made up the largest proportion of regular employees (63.4%), while high school graduates made up the largest proportion of non-regular employees (46.1%).

### 3.2 Measurements

A leader’s role is represented by their leadership style in that the leader–employee interaction serves as a source of motivation for employees and leads to the achievement of organizational goals. Questionnaire items on the role of leaders used in previous studies and the KWCS were also used in the present study [89,90]. These included items on respect, compliments, cooperation, support, feedback, and encouragement, which were used to evaluate the role of the leader. For job autonomy and job satisfaction, related items were extracted from the KWCS based on the Korean occupational stress measurement tool [91,92]. Job satisfaction was measured by wage, prospect, recognition, human relations, and motivation. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure the leader’s role and job satisfaction. Job autonomy was measured by workload control and decision-making, using a 5-point Likert scale ranging from 1 (never) to 5 (always). The WHO-5 Well-being Index, a global depression measurement scale comprising items in five categories—good spirits, relaxation, being active, waking up fresh, and

being interested in things—was used to measure depression [93]. Responses were marked on a 5-point Likert scale ranging from 1 (always) to 5 (never).

### 3.3 Analyses

The Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to test the proposed hypotheses. The internal consistency reliability, convergent validity, and discriminant validity for the variables of leader role, depression, job autonomy, and job satisfaction were examined. Multicollinearity, coefficient of determination, effect size, and predictive relevance were examined for the evaluation of the structural model. SPSS 18.0 (IBM, Armonk, NY, USA) was used for the analysis of participants’ demographic characteristics and SmartPLS 3.0 (SmartPLS GmbH, Bönningstedt, Germany) was used for the PLS-SEM analysis.

#### 3.3.1 Reliability and validity

To test the structural model, the reliability and validity of the measurement variables must be evaluated beforehand through the measurement model. Internal consistency reliability was used to evaluate reliability, while convergent validity and discriminant validity were used to evaluate validity. Cronbach’s  $\alpha$ , Dijkstra-Henseler’s rho A, and composite reliability (CR) were used as the evaluation criteria for internal consistency reliability. A value greater than 0.6 for Cronbach’s  $\alpha$ , a rho\_A value greater than 0.7, and a CR value greater than 0.6 were considered reliable [94]. The results of the evaluation of the reliability of the variables in regular employees were as follows: 0.719–0.904 Cronbach’s  $\alpha$ , 0.725–0.906 rho A, and 0.861–0.929 CR. The results of the evaluation of the reliability of the variables in

**Table 1. Demographic characteristics.**

Category	Characteristic	Regular employees		Non-regular employees		Total	
		Frequency (n)	Proportion (%)	Frequency (n)	Proportion (%)	Frequency (n)	Proportion (%)
Gender	Male	10,162	52.1	1943	40.3	12,105	49.8
	Female	9344	47.9	2878	59.7	12,222	50.2
Age (years)	15–19	61	0.3	126	2.6	187	0.8
	20–29	2550	13.1	693	14.4	3243	13.3
	30–39	5390	27.6	506	10.5	5896	24.3
	40–49	5684	29.2	772	16.0	6456	26.5
	50–59	4298	22.0	1160	24.1	5458	22.4
	60 or over	1523	7.8	1564	32.4	3087	12.7
Education	Less than elementary school degree	288	1.5	714	14.8	1002	4.1
	Middle school diploma	762	3.9	771	16.0	1533	6.3
	High school diploma	6087	31.2	2224	46.1	8311	34.2
	University diploma or higher	12,369	63.4	1112	23.1	13,481	55.4

non-regular employees, on the other hand, were as follows: 0.749–0.921 Cronbach’s  $\alpha$ , 0.783–0.923 rho A, and 0.864–0.940 CR. The measurement variables in both regular and non-regular employees were thus confirmed to be reliable.

The outer loading relevance and average variance extracted (AVE) were used as the evaluation criteria for convergent validity. The measurement variables were maintained at an outer loading relevance greater than 0.7, and an AVE greater than 0.5 indicated sufficient convergent validity [94]. The outer loading relevance in regular employees ranged between 0.710 and 0.897, while the AVE ranged between 0.554 and 0.780. The outer loading relevance in non-regular employees ranged between 0.704 and 0.921, while the AVE ranged between 0.562 and 0.797.

Convergent validity was confirmed for the measurement variables for both regular and non-regular employees. The Fornell–Larcker criterion was used as the evaluation metric for discriminant validity, which was confirmed for both regular and non-regular employees. The analysis of convergent validity, internal consistency reliability, and discriminant validity in both regular and non-regular employees is listed in Table 2.

### 3.3.2 Evaluation of the structural model

The evaluation of the structural model was performed as a final confirmation process wherein the appropriateness of the present study’s model was determined. The evaluation of the structural model involved tests for multicollinearity, coefficient of determination ( $R^2$ ), effect size ( $f^2$ ), and predictive relevance ( $Q^2$ ).

An internal VIF value under 5 indicates no multicollinearity [94]. The inner VIF value ranged between 1.000 and 1.128 among regular employees, and between 1.000 and 1.177 among non-regular employees. Thus, there were no issues with multicollinearity in either group.

$R^2$  indicates the explanatory power of the exogenous

latent variable on the endogenous latent variable. The adjusted  $R^2$  values for regular employees were 0.101 for job autonomy, 0.096 for depression, and 0.324 for job satisfaction. On the other hand, the adjusted  $R^2$  for non-regular employees was 0.133 for job autonomy, 0.063 for depression, and 0.323 for job satisfaction.

$f^2$  indicates the level of contribution of the exogenous latent variable to the  $R^2$  of the endogenous latent variable. First, the  $f^2$  values of regular employees were examined, for which the contribution of the leader’s role on the  $R^2$  of depression, job autonomy, and job satisfaction were 0.062, 0.113, and 0.232, respectively. The contribution of job autonomy on the  $R^2$  of depression and job satisfaction was 0.014 for both, while the contribution of depression to the  $R^2$  of job satisfaction was 0.055. In an analysis of the  $f^2$  value of non-regular employees, the contribution of the leader’s role in the  $R^2$  of depression, job autonomy, and job satisfaction were 0.103, 0.067, and 0.210, respectively, while the contribution of job autonomy on the  $R^2$  of depression and job satisfaction were 0.019 and 0.012, respectively. The contribution of depression to the  $R^2$  of job satisfaction was 0.069.

$Q^2$  indicates whether the structural model has a predictive fit to a specific endogenous latent variable, and a  $Q^2$  value greater than 0 indicates predictive fit [94]. An analysis of regular employees demonstrated  $Q^2$  values of 0.070 for depression, 0.095 for job autonomy, and 0.186 for job satisfaction. In non-regular employees, the  $Q^2$  values for depression, job autonomy, and job satisfaction were 0.102, 0.046, and 0.164, respectively. As such, all  $Q^2$  values were greater than 0, and a predictive fit was confirmed.

## 4. Results

The results of structural equation modeling on regular and non-regular employees are shown in Figs. 2,3, respectively. The results of hypothesis testing on regular and

**Table 2. Convergent validity, internal consistency reliability, and discriminant validity by group.**

Category	Variable	Measurement variable	Convergent validity		Internal consistency reliability		Discriminant validity	
			Outer loading	AVE	Cronbachs' $\alpha$	rho A	CR	F-L
Regular employee	Leader role	Respect	0.772	0.619	0.877	0.877	0.907	Yes
		Compliments	0.788					
		Cooperation	0.785					
		Support	0.787					
		Feedback	0.786					
		Encouragement	0.802					
	Job autonomy	Workload control	0.897	0.780	0.719	0.725	0.876	Yes
		Decision-making	0.867					
	Depression	Good spirits	0.869	0.724	0.904	0.906	0.929	Yes
		Relaxation	0.844					
	Job satisfaction	Being active	0.872	0.554	0.799	0.805	0.861	Yes
		Waking up fresh	0.846					
		Being interested in things	0.821					
		Wage	0.741					
		Prospect	0.719					
Recognition		0.796						
Human relations		0.710						
Motivation	0.775							
Non-regular employee	Leader role	Respect	0.803	0.670	0.901	0.902	0.924	Yes
		Compliments	0.815					
		Cooperation	0.829					
		Support	0.828					
		Feedback	0.814					
		Encouragement	0.820					
	Job autonomy	Workload control	0.921	0.797	0.749	0.783	0.887	Yes
		Decision-making	0.864					
	Depression	Good spirits	0.902	0.760	0.921	0.923	0.940	Yes
		Relaxation	0.856					
	Job satisfaction	Being active	0.891	0.562	0.804	0.816	0.864	Yes
		Waking up fresh	0.863					
		Being interested in things	0.844					
		Wage	0.754					
		Prospect	0.704					
Recognition		0.800						
Human relations		0.708						
Motivation	0.805							

AVE, average variance extracted; CR, composite reliability; F-L, Fornell-Larcker criterion.

non-regular employees are listed in Tables 3,4, respectively. Hypotheses H1, H2, H3, H5, H6, and H7 were adopted for both regular and non-regular employees. The leader's role had a significant effect on job satisfaction, job autonomy, and depression in both types of employment. Job autonomy had a significant effect on depression and job satisfaction, while depression had a significant effect on job satisfaction. The variable with the greatest effect on job satisfaction, in both regular and non-regular employees, was the leader's role, followed by depression and job autonomy. The re-

sults of analyzing the mediating effects through an analysis of the specific indirect effects on regular and non-regular employees are presented in Tables 5,6, respectively. Hypotheses H4, H8, H9, and H10 were adopted for all types of employment, both regular and non-regular. The leader's role had a significantly positive (+) effect on job satisfaction, mediated by job autonomy. Leader role also had a significantly positive (+) effect on job satisfaction mediated by depression, and a significantly positive (+) effect on job satisfaction mediated by job autonomy and depression. Job

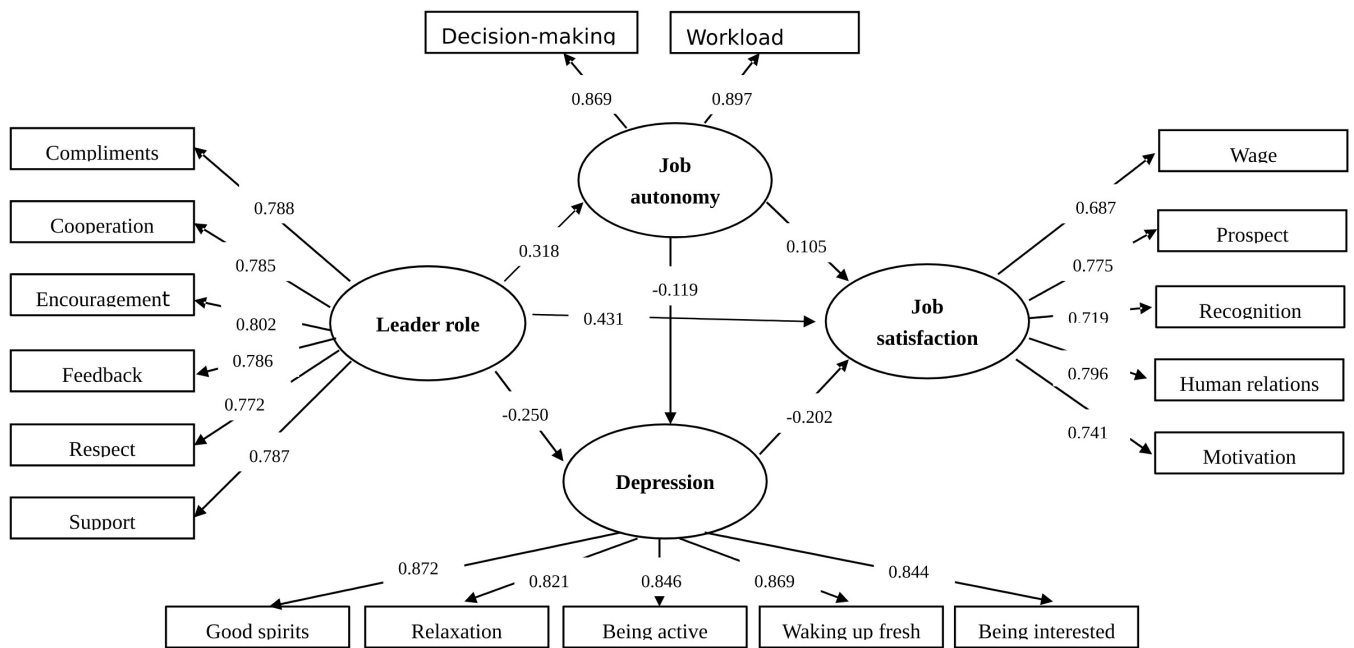


Fig. 2. Structural model for regular employees.

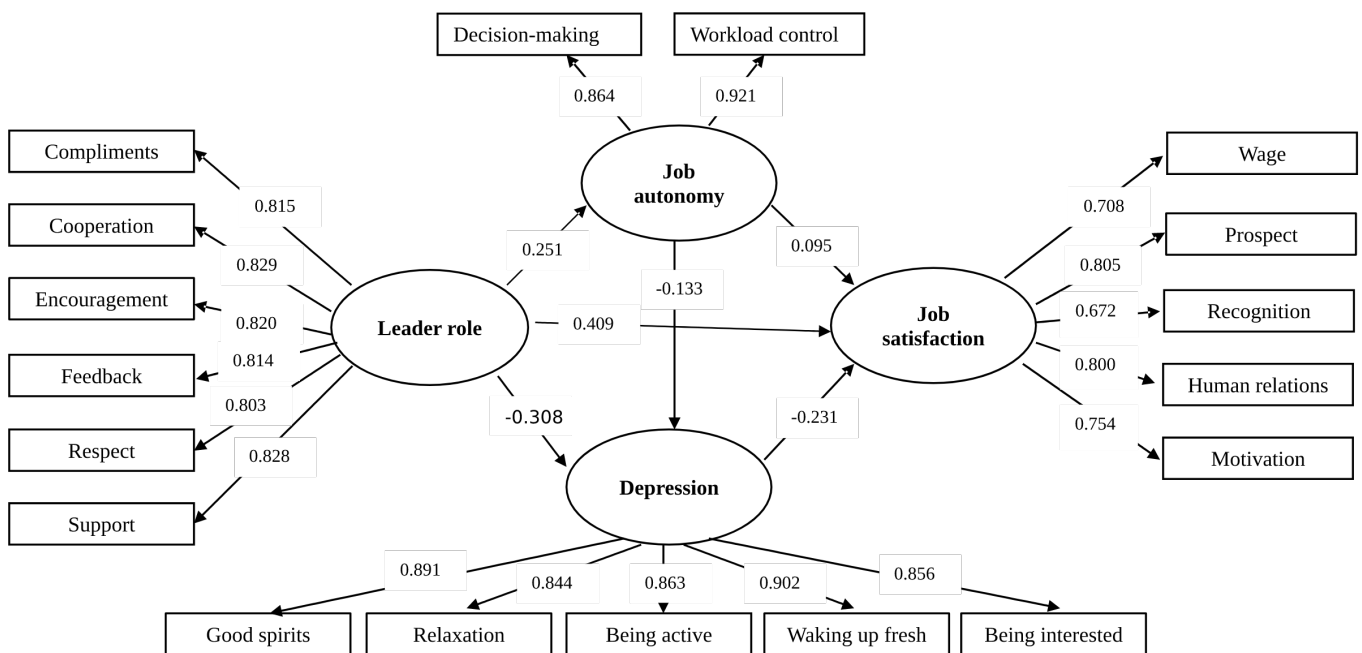


Fig. 3. Structural model for non-regular employees.

autonomy had a significantly positive (+) effect on job satisfaction mediated by depression.

The analysis results regarding the difference between the path coefficients of regular and non-regular employees are presented in Table 7. Significant differences in path coefficients were observed between regular and non-regular employees regarding the effect of the leader's role on job autonomy and depression, and the effect of depression on job satisfaction. However, there were no significant dif-

ferences between the path coefficients of the two groups regarding the effect of the leader's role on job satisfaction, the effect of job autonomy on job satisfaction, and the effect of job autonomy on depression.

## 5. Discussion

This study analyzed the effect of the leader's role on the job satisfaction of regular and non-regular employees. Further, I also ascertained the effects of job autonomy and



**Table 3. Results of hypotheses testing in regular employees.**

Hypothetical path	PC	<i>t</i> value	95% CI
(H1) Leader role → Job satisfaction	0.431**	61.003	(0.417, 0.444)
(H2) Leader role → Job autonomy	0.318**	45.588	(0.304, 0.332)
(H3) Job autonomy → Job satisfaction	0.105**	15.593	(0.092, 0.118)
(H5) Leader role → Depression	-0.250**	32.979	(-0.264, -0.235)
(H6) Depression → Job satisfaction	-0.202**	29.986	(-0.215, -0.188)
(H7) Job autonomy → Depression	-0.119**	16.452	(-0.134, -0.105)

PC, path coefficient; CI, confidence interval. \*\*,  $p < 0.001$ .

**Table 4. Results of hypotheses testing in non-regular employees.**

Hypothetical path	PC	<i>t</i> value	95% CI
(H1) Leader role → Job satisfaction	0.409**	29.736	(0.382, 0.437)
(H2) Leader role → Job autonomy	0.251**	17.935	(0.223, 0.278)
(H3) Job autonomy → Job satisfaction	0.095**	7.107	(0.068, 0.120)
(H5) Leader role → Depression	-0.308**	21.637	(-0.336, -0.281)
(H6) Depression → Job satisfaction	-0.231**	17.563	(-0.258, -0.206)
(H7) Job autonomy → Depression	-0.133**	9.408	(-0.160, -0.104)

PC, path coefficient; CI, confidence interval. \*\*,  $p < 0.001$ .

**Table 5. Results of hypotheses testing on the mediating effects in regular employees.**

Hypothetical path	PC	<i>t</i> value	95% CI
(H4) Leader role → Job autonomy → Job satisfaction	0.033**	14.081	(0.029, 0.038)
(H8) Leader role → Depression → Job satisfaction	0.051**	22.518	(0.046, 0.055)
(H9) Leader role → Job autonomy → Depression → Job satisfaction	0.008**	13.423	(0.007, 0.009)
(H10) Job autonomy → Depression → Job satisfaction	0.024**	14.081	(0.021, 0.028)

PC, path coefficient; CI, confidence interval. \*\*,  $p < 0.001$ .

**Table 6. Results of hypotheses testing on the mediating effects in non-regular employees.**

Hypothetical path	PC	<i>t</i> value	95% CI
(H4) Leader role → Job autonomy → Job satisfaction	0.024**	6.488	(0.017, 0.031)
(H8) Leader role → Depression → Job satisfaction	0.071**	13.622	(0.061, 0.082)
(H9) Leader role → Job autonomy → Depression → Job satisfaction	0.008**	7.480	(0.006, 0.010)
(H10) Job autonomy → Depression → Job satisfaction	0.031**	8.264	(0.023, 0.038)

PC, path coefficient; CI, confidence interval. \*\*,  $p < 0.001$ .

**Table 7. Analysis of the difference between the path coefficients of regular and non-regular employees.**

Path	PC diff	<i>p</i> value
Leader role → Job satisfaction	0.022	0.165
Leader role → Job autonomy	0.067**	<0.001
Job autonomy → Job satisfaction	0.010	0.506
Leader role → Depression	0.058**	<0.001
Depression → Job satisfaction	0.029*	0.048
Job autonomy → Depression	0.013	0.394

PC diff, path coefficient difference. \*,  $p < 0.05$ . \*\*,  $p < 0.001$ .

depression on the relationship between the leader's role and job satisfaction. The types of employees examined were regular and non-regular employees. The results of the analysis, based on the established hypotheses, are summarized as follows.

In both regular and non-regular employees, the leader's role had a positive effect on employee job satisfaction. Among the leader's role, job autonomy, and depression, the leader's role was identified as the variable with the greatest effect on employee job satisfaction. The leader's persisting interest in and support for employees create the motivation to work and foster a proactive and efficient attitude toward the organization and job among employees [95]. It has been reported that when employees feel supported by their leaders, they strive for positive outcomes not

only individually but also through collaboration with others; such results have further positive effects on employee job satisfaction [96].

The leader's role had a positive effect on job autonomy in both regular and non-regular employees, thereby supporting the findings of previous research [97]. In other words, the role of the leader, demonstrated through feedback, encouragement, and respect for the employees, helps them work together more efficiently and enhances their job autonomy.

The leader's role reduced depression in both regular and non-regular employees. It has been reported that many employees suffer from depression owing to the present competitive job environments. The role of the leader is crucial in such circumstances. Leaders' respect for employees, praise and support for the latter's accomplishments, the establishment of a cooperative system among the members of the organization, feedback, and encouragement had a positive effect in reducing depression among employees.

Job autonomy increased job satisfaction in both regular and non-regular employees. Job autonomy—an important factor influencing employee motivation and attitude—increases motivation in employees, thereby positively affecting job satisfaction [98,99]. Moreover, job autonomy not only increases participation in the organizational decision-making process but also positively affects cohesion among employees, thus reducing job stress and improving job satisfaction [69,70]. It has been reported that job stress doubles the risk of mental health problems, such as depression and anxiety in employees; thus, job stress has a negative effect on depression [100]. As job autonomy has a positive effect on reducing job stress, it also reduces employees' depression. Hence, job autonomy was found to reduce depression among both regular and non-regular employees in this study.

Furthermore, depression was found to have a negative effect on job satisfaction. Depression has been reported to be caused by job dissatisfaction, loss of motivation, and overwhelming emotional conflict; moreover, it has a significant effect on the productivity of employees [101]. Depression affects job satisfaction both directly and indirectly through factors, such as leadership and job stress. Therefore, this study agreed with previous research that depression has a negative effect on job satisfaction.

Job autonomy and depression were found to have a mediating effect on the relationship between the leader's role and job satisfaction for both regular and non-regular employees. The leader's role not only had a direct positive effect on employee job satisfaction but also had an indirect positive effect on job satisfaction through job autonomy. In other words, this study found that the leader's role had a positive effect on employee job satisfaction and further increased job satisfaction through job autonomy. Furthermore, depression was identified as a mediator in the relationship between the leader's role and job satisfaction. The

leader's role was found to reduce depression among employees, which increased job satisfaction.

The magnitude of the influence between the variables for each employment type was checked through path coefficients, and it was examined whether the size of the path coefficients differed by employment type. Although the role of leaders influenced job satisfaction, and job autonomy affected job satisfaction and depression, the magnitude of the influence did not differ between regular and non-regular employees. However, the leader's role affected job autonomy and depression, and depression affected job satisfaction, and the magnitude of the influence differed between regular and non-regular employees. The leader's role had a positive effect on job autonomy, and this effect was greater on regular employees than on non-regular employees. Considering job autonomy, non-regular employees tend to have their jobs already decided from the time they begin working and are often assigned subsidiary work with lower job autonomy than regular employees [35]. Thus, the present findings also reveal that a difference in the leader's role in increasing job autonomy is inevitable between regular and non-regular employees.

The leader's role was found to have a greater effect on reducing depression among non-regular employees than among regular employees. Non-regular employees showed higher rates of depression compared to regular employees due to low wages, job instability, poor working conditions, and lack of job autonomy [33,102]. Under such circumstances, respect, compliments, cooperation, support, feedback, and encouragement from leaders were found to be more effective in improving depression among non-regular employees than among regular workers. As depression was more effectively reduced in non-regular employees than in regular employees, the effect of depression on job satisfaction was also greater among non-regular employees.

There are some limitations to this study. Apart from the leader's role, job autonomy, and depression, the factors that affect employee job satisfaction also include job demands and work environment. However, due to restrictions in data collection from the KWCS, there were limitations on conducting a broader analysis to examine several factors. In this study, a cross-sectional analysis was conducted based on a specific point in time, and thus it had limitations in analyzing factors that may vary with time. Therefore, a longitudinal analysis is needed in future research to determine the differences between the path coefficients of regular and non-regular employees over time. Furthermore, although analyses were conducted only on regular and non-regular employees in this study, more detailed analyses of the leader's role, job satisfaction, job autonomy, and depression in both regular and non-regular employees according to industry or company size will provide a wider variety of data.

## 6. Conclusions

This study analyzed the effect of the leaders' roles on employees' job satisfaction, as well as the impact of job autonomy and depression on the relationship between leader role and job satisfaction for regular and non-regular employment. The leader's role had a positive effect on job satisfaction among both regular and non-regular employees. Additionally, a mediating effect was observed wherein employee job satisfaction increased through job autonomy. Furthermore, this study found a mediating effect of depression in the relationship between the leader's role and job satisfaction for both regular and non-regular employees. Among leader's role, job autonomy, and depression, the first had the greatest effect on job satisfaction. The effect of the leader's role on employee job autonomy was greater on regular employees than on non-regular employees, while the effect of the leader's role on depression was greater on non-regular employees than on regular employees.

Thus, it is clear that leaders play an important role in employee job satisfaction; consequently, it is fundamental that they respect, praise, and encourage their employees. Leaders must establish and support collaboration among employees and provide helpful and relevant feedback. The differences in the effect of the leader's role on job autonomy and depression between regular and non-regular employees indicate a need for different managerial focuses based on the type of employment. In other words, for non-regular workers, there is a limit to the expansion of job autonomy due to the nature of their work, which suggests that leaders must focus more on reducing employees' depression, thereby increasing employees' job satisfaction. On the other hand, because regular employees are often loyal to their affiliated organizations and are proactive at work, the present findings suggest that leaders should focus on expanding job autonomy for their employees, such as employee participation in decision-making and workload control, which is more effective in increasing their job satisfaction.

### Author contributions

KWK conducted conceptualization, collected and analyzed the data, wrote the paper, reviewed and edited the paper.

### Ethics approval and consent to participate

Not applicable.

### Acknowledgment

Thanks to all the peer reviewers for their opinions and suggestions.

### Funding

This research received no external funding.

## Conflict of interest

The author declares no conflict of interest.

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