

The Impact of Autonomous Virtual Work Environments on Job Satisfaction and Organizational Effectiveness

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ABSTRACT

The objective of this study is to explore the perceptions of justice regarding the implementation of flexible work arrangements, as well as to analyze the effects of such arrangements on job satisfaction and organizational effectiveness. The present study posits three key aspects, namely distributive justice, procedural justice, and interactional justice, which are hypothesized to influence individuals' impression of justice in relation to flexible work systems. To investigate the influence of job types on an R&D organization, specifically comparing R&D employees and office management employees, a dataset of 190 R&D employees and 50 office management employees was collected. The findings of the investigation provide empirical evidence that distributive justice has a significant impact on the level of job satisfaction among employees in both research and development (R&D) and office administration roles. Moreover, the influence of work satisfaction on organizational performance is noteworthy, particularly with regard to factors such as job dedication, organizational citizenship behavior, and knowledge sharing. The aforementioned findings offer significant insights for research and development (R&D) firms that have incorporated flexible work arrangements. These insights underscore the significance of emphasizing specific justice perceptions in order to augment job satisfaction and overall performance within the organization.

Keywords: Flexible Work Arrangements, Perceived Justice, R&D Organizations, Job Satisfaction, Organizational Effectiveness, Job Types

1. Introduction

The utilization of information technologies in hu-

man resource management has led to an increasing recognition of the necessity for data-driven scientific management (Peeters et al., 2020). One of the primary

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motivations behind the integration of artificial intelligence (AI) in professional settings is the enhancement of work performance through the elimination of inefficiencies and the mitigation of human error (Hardin, 1960). The notion that artificial intelligence (AI) has the capability to undertake monotonous and laborious responsibilities on behalf of workers, thereby enabling them to concentrate on tasks that are more innovative and fruitful (Bhargava et al., 2021), as well as the belief that data can be utilized to gain improved insights into and evaluate employee advancement (Peeters et al., 2020), is grounded in the proposition that data-centric people analytics is both essential and feasible.

According to Oktradiksa et al. (2021), as AI increasingly takes on various activities, firms with a proactive mindset might reallocate their resources towards more innovative research and development (R&D) initiatives. This transition is in accordance with the preferences of younger cohorts, who prioritize the attainment of a harmonious equilibrium between work and personal life, and place significance on leading a satisfying and meaningful existence (Byrne, 2005). The significance of adopting flexible work arrangements, which seek to offer employees greater independence in terms of their work schedule and location, is expected to grow even more with the full realization of AI capabilities. The convergence of various innovations such as AI, teleconferencing, and metaverse technologies is empowering creative workers to choose their preferred work settings, timeframes, and methods. Furthermore, data-driven approaches and machine learning technologies are continuously advancing to adapt and refine their operations.

Nevertheless, there is a dearth of knowledge regarding the extent to which innovative businesses perceive and utilize flexible work arrangements. The

existence of this research gap presents difficulties in the identification of prospective hurdles and the development of effective solutions that may emerge during the implementation of artificial intelligence in forward-thinking enterprises. One of the most important questions is what impact does perceived fairness have on supporting individualistic work activities in an innovative organization that is supposed to maximize team performance by facilitating knowledge sharing and organizational citizenship? If flexible work arrangement policies have a negative impact on employees' perceptions of fairness, then the policies and technologies may need to be revised.

The objective of this study is to examine the perspectives held by employees inside R&D units about flexible work arrangements. The research outcomes yield valuable insights on the readiness for incorporating artificial intelligence into the work environment. Additionally, it provides strategic guidance for developing a highly efficient R&D unit that is centered around information technology. It should be noted that R&D units are widely acknowledged as crucial catalysts of innovation, playing a significant role in augmenting a company's competitive edge and financial performance (Galbraith, 1982). Furthermore, it is anticipated that the implementation of flexible work arrangements will facilitate the development of creativity among employees, as it allows them to exercise increased autonomy in deciding their work schedule and physical work environment (Kim et al., 2018). Since 2018, South Korea has been actively engaged in ongoing initiatives aimed at fostering a more favorable equilibrium between work and personal life by introducing flexible work arrangements. Nevertheless, there have been apprehensions raised over the potential adverse effects of these arrangements on the functioning of organizations especially in R&D units. These con-

cerns stem from the diminished level of control over employees and the difficulties encountered in managing human resources (Almer and Kaplan, 2000). The efficacy of data-driven human resource management and the integration of artificial intelligence in addressing the divergent viewpoints of flexible work arrangements remains indeterminate. Hence, the primary objective of this study is to make a scholarly contribution and enhance practical understanding by defining the specific variables that are essential for flexible work arrangements to produce favorable results.

II. Background

2.1. Flexible Work Arrangement

Flexible work arrangements encompass policies and practices that offer employees the autonomy to choose and adapt their customary work setting or timetable (Rau and Hyland, 2002). In the context of South Korea, it is stipulated under Article 52 of the Labor Standards Act that the implementation of flexible working hours is permissible under the condition of mutual consent (Act No. 18176, May 18, 2021, with partial amendments). According to Goñi-Legaz and Ollo-López (2015), flexible work arrangements are commonly regarded as a potential strategy for mitigating the problem of declining birth rates. The concept posits that by granting individuals increased autonomy in selecting their place of employment and determining their working hours, in situations where conflicts arise between childcare duties and work engagements, it will alleviate the propensity for employees to resign from their positions (Ko and Kim, 2018).

The favorable image of flexible work arrangements

is based on the notion that granting workers greater liberty can potentially enhance their concentration and innovation. Nevertheless, extant literature suggests that the implementation of flexible work arrangements can give rise to conflicts. An example of this may be seen in a meta-analysis conducted by Allen et al. (2013), which demonstrated that these types of arrangements have the potential to contribute to conflicts between work and family responsibilities. This matter presents significant challenges when the workplace is situated within a residential environment. According to Shockley and Allen (2007), the effectiveness of flexible work arrangements may be diminished in non-traditional work settings due to the potential for family engagements to have a greater impact on job performance compared to the reverse scenario. Furthermore, Russell et al. (2009) express skepticism regarding the widespread adoption of favorable views towards flexible work arrangements among employees. They argue that specific types of flexibility might, in fact, intensify the conflict between work and family responsibilities.

In spite of apprehensions about flexible work arrangements, it is observed that enterprises in South Korea tend to adopt such arrangements in accordance with government policies, company performance, and cultural factors. <Table 1> provides a comprehensive overview of the many flexible work arrangements that have been introduced by prominent Korean businesses.

2.2. Perceived Justice in Innovation Organizations

Andersson et al. (2009) found that there is a positive relationship between employees working in businesses that encourage innovation and their need for greater compensation. This phenomenon can be as-

<Table 1> Flexible Work Arrangements Examples by Korean Conglomerate

Company name	Year	Description
Lotte R&D Center	2017	A (08:00~17:00), B (09:00~18:00), C (10:00~19:00) types of hours are introduced.
LG R&D Center	2018	Set a start time of 6am to 2pm and adjust the end time freely.
LG Life Health	2017	Segmented the commute into five different times (07:00-16:00, 07:30-16:30, 08:00-17:00, 08:30-17:30, 09:00-18:00).
Samsung Electronics	2017	Mandatory 4-hour workday in the workplace.

cribed to the individuals’ sense of making more substantial sacrifices in their personal and professional spheres in comparison to the typical person. Call et al. (2015) provide support for this concept by highlighting the expectation of knowledge workers to receive suitable rewards for their exertions, which go beyond the basic duration of their work hours. The benefits should be commensurate with the caliber and intricacy of the knowledge they give, in addition to their substantial contributions to joint endeavors. It is noteworthy to acknowledge that these incentives are not restricted solely to financial remuneration, but rather involve a range of elements including employment status, decision-making autonomy, and the overall caliber of team engagements (Lee, 2022).

According to Tong et al. (2021), the integration of AI and the adoption of flexible work arrangements hold the capacity to induce substantial transformations in both the nature of work tasks and the overall work setting. As a result, these changes have the ability to influence the perception of value that individuals inside innovative businesses attribute to their contributions. The advancing analytical capacities of AI have raised the prospect that the unique expertise held by knowledge workers will potentially diminish in value, while the significance of intangible assets, such as creativity, may see an elevation. Moreover, the progress in virtual and augmented reality technologies that facilitate metaverses, coupled with the implementation of contactless technologies driven by the COVID-19 pandemic, alongside ad-

vancements in people analytics, have the potential to reshape the conventional responsibilities undertaken by individuals within innovation organizations during team-based endeavors. According to Manuti and Monachino (2020), workers in innovative firms that possess valuable knowledge capital do not necessarily oppose the introduction of AI. However, they do have concerns about how it may effect the justice of their position evaluations up to this point. In light of these problems, there is a growing advocacy for the implementation of flexible work arrangements as a viable strategy to effectively harness creativity. Nevertheless, the efficacy of flexible work arrangements remains unknown unless concerns pertaining to the equitable assessment of work are sufficiently resolved.

III. Hypotheses

The determination of justice is of significant importance to both organizations and individuals, as it is contingent upon the correlation between inputs and outputs. This relationship can be subjected to additional analysis by taking into account other parameters. The promotion of justice by an organization is directly linked to its overall effectiveness (Alexander and Ruderman, 1987). The manner in which individuals within an organization view equity has a significant impact on their work attitudes and has the potential to alter the overall corporate culture

(Konovsky et al., 1987). The perception of justice is fundamentally rooted in the evaluation of the proportionality between the level of effort exerted and the corresponding rewards received. Perceptions of justice, as viewed through the lens of input-reward analysis, are contingent upon the congruence between the quantity of the reward and the corresponding level of effort exerted (Folger and Konovsky, 1989). Organizational members see equitable treatment when their rewards align proportionally with their individual contributions. In order to further explore this idea, it is important to consider the existing theories on the perception of justice. These theories can be categorized into three dimensions: procedural justice, distributive justice, and interactional justice (Adams, 1965). Procedural justice encompasses the subjective perception of justice in the processes employed for decision-making inside an organization, whereas distributive justice pertains to the subjective perception of equity in the allocation of resources. Finally, interactional justice pertains to the manner in which individuals evaluate their treatment and interpersonal interactions inside the organizational context.

According to Porter et al. (1974), job satisfaction is recognized as a factor that elucidates the drive to actively engage and make contributions to work, depending on one's perception of justice. There exists a commonly held view that enhancing job satisfaction among employees helps foster a productive and innovative atmosphere inside R&D units that prioritize performance (Thompson and Heron, 2006). Consequently, it is anticipated that this will have a favorable effect on research initiatives and overall levels of production. Based on the fundamental principles of perceived justice and job satisfaction, we put out a subsequent series of hypotheses:

H1: The implementation of distributive justice in the introduction of flexible work arrangements is expected to have a positive impact on the job satisfaction levels of members within R&D organizations.

H2: The implementation of procedural justice during the introduction of flexible work arrangements is expected to have a positive impact on the job satisfaction levels of members within R&D organizations.

H3: The implementation of flexible work arrangements in R&D organizations will result in increased job satisfaction among members, as a consequence of the establishment of interactional justice.

The relationship between job attitudes and the perception of justice among organizational members can be established based on the outcomes seen. Perceived justice has the potential to influence the efficacy of an organization by affecting the performance and efficiency of tasks carried out by its members (Chan and Lai, 2017). Job engagement is a significant and reliable measure of corporate effectiveness. Based on the findings of Lau and Woodman (1995), there exists a notable inclination to posit that heightened degrees of employee job engagement have a positive impact on organizational performance by fostering greater engagement in innovative endeavors.

Organizational citizenship behavior refers to the voluntary behaviors performed by individuals within an organization that go beyond their formal work requirements, with the intention of benefiting other members or the organization as a whole (Williams et al., 2002). In the realm of R&D endeavors, collaborative efforts are commonly observed to surpass the reliance on the singular extraordinary aptitude or talent of an individual. Additionally, the presence of high levels of job satisfaction can cultivate a sense of camaraderie among workers, resulting in a propensity to offer support to peers and proactively address

and resolve problems (Menguc et al., 2016).

Consistent with the theoretical framework of organizational citizenship behavior, empirical evidence suggests that a robust level of job satisfaction plays a significant role in mitigating the adverse consequences linked to knowledge rivalry within a given organizational context (Williams et al., 2002). Therefore, it is anticipated that this favorable correlation will enhance the sharing of knowledge, specifically inside R&D units (Thompson and Heron, 2006). Therefore, the act of sharing knowledge can be seen as a valid measure of organizational effectiveness. Based on the aforementioned premises, we suggest the subsequent hypotheses pertaining to job engagement, organizational citizenship behavior, and knowledge sharing: The augmentation of job satisfaction as a consequence of the implementation of flexible work arrangements will yield a favorable influence on the overall efficacy of the organization.

H4: The implementation of flexible work arrangements will positively impact job satisfaction among R&D organization members, leading to increased job engagement.

H5: Job satisfaction with the introduction of flexible work arrangements will positively influence organizational citizenship behavior of R&D organization members.

H6: R&D organization members' job satisfaction with the introduction of flexible work arrangements will positively affect their knowledge sharing activities.

IV. Data and Analysis Result

4.1. Data

Survey data was collected from employees of Korean companies that have implemented flexible

work arrangements. A total of 245 copies were initially collected, and after excluding non-respondents, 240 copies (consisting of 190 from the R&D unit and 50 from the control group unit) were included in the final analysis. The demographic characteristics of the data are presented in <Table 2>.

4.2. Measurements

To evaluate the research methodology and hypotheses proposed in this study, a 7-point Likert scale was utilized to measure participants' judgments of justice and organizational performance. The measurement of organizational effectiveness was conducted using proxy variables, namely job dedication,

<Table 2> Demographic Characteristics of the Sample

Category	Item	Frequency (N = 240)	
		Count	%
Sex	Male	145	60.4
	Female	95	39.6
Age	20+ years old	62	25.9
	30+ years old	95	39.6
	40+ years old	58	24.2
	50+ years old	25	10.3
Education	High school	2	0.8
	College graduate	8	3.4
	University graduate	78	32.5
	Master's degree	110	45.9
	PhD	52	17.4
Years of service	1 ~ under 5 years	93	38.8
	5 ~ under 10 years	58	24.2
	10 ~ under 15 years	36	15
	15 ~ under 20 years	27	11.3
	20+ years	26	10.7
Group	R&D	50	20.8
	Other (control group)	190	79.2

organizational citizenship behavior, and knowledge sharing. These proxy variables were generated from existing literature. <Table 3> presents the operational definitions of the variables, together with the respective literature references, in a systematic manner.

The reliability of the measures was assessed by calculating Cronbach's alpha and composite reliability. A benchmark of 0.7 was used, based on previous literature (Nunnally and Bernstein, 1994). <Table 4> presents the results, indicating that the Cronbach's alpha value exceeds 0.910 and the composite reliability (CR) value exceeds 0.943, providing strong evidence for the high reliability of the measures.

Confirmatory factor analysis (CFA) was utilized to assess the reliability of the variables. The Average Variance Extracted (AVE) values for all components were found to exceed the threshold of 0.8, as shown in <Table 4>. This result surpasses the criteria set by Fornell and Larcker (1981), indicating a satisfactory level of convergence. Furthermore, an ex-

amination of the factor loading values revealed a range from 0.82 to 0.92, providing additional evidence for the validity of the construct (Bagozzi et al., 1991). By comparing the square root of the AVE with the correlation coefficient of each latent variable, it was determined that they surpass the maximum value of the correlation coefficient, thus confirming discriminant validity.

4.3. Results

To examine the research hypotheses, statistical analyses were conducted utilizing the SmartPLS software and employing the bootstrapping resampling technique. The obtained results indicated significant associations between certain theoretical constructs of perceived justice in relation to flexible work arrangements and job satisfaction within R&D organizations. Moreover, job satisfaction was found to exert a significant influence on job commitment, organizational citizenship behavior, and knowledge

<Table 3> Operational Definition of Variables

Variable	Operational Definition	Reference
Distributional justice	The level of subjective judgment on the economic consequences of adopting flexible work arrangements are by job type	Ziegler (2006)
Procedural justice	The level of subjective judgment on the process or criteria for offering flexible work arrangements	Brashear et al. (2004)
Interactional justice	The level of subjective judgment on the faire treatment on communications about the outcome of a flexible work arrangement	Dayan and Di Benedetto (2008)
Job comitment	The degree to which an organization's members feel connected to the work they do, which determines their attitudes toward the organization and their motivation to do their jobs.	Porter et al. (1974)
Organizational citizenship behavior	The extent to which the introduction of the system has resulted in voluntary actions by organization members who do not expect a formal reward system for doing their jobs	Williams et al. (2002)
Knowledge sharing	The extent to which members of an organization share knowledge with other members of the organization	Murtaza et al. (2016)
Job satisfaction	The sum total of all emotions experienced by an individual in relation to a job; the degree to which an attitude is based on the individual's values and desires	Chan and Lai (2017)

<Table 4> Reliability and Validity

Variable		Factor Loading	Cronbach's Alpha	CR	AVE
Distributinal justice	DJ1	0.935	0.973	0.978	0.882
	DJ2	0.936			
	DJ3	0.950			
	DJ4	0.938			
	DJ5	0.937			
	DJ6	0.940			
Procedural justice	PJ1	0.894	0.930	0.941	0.728
	PJ2	0.819			
	PJ3	0.848			
	PJ4	0.889			
	PJ5	0.831			
	PJ6	0.834			
Interactional justice	IC2	0.931	0.956	0.965	0.872
	IC3	0.965			
	IC4	0.878			
	IC5	0.958			
Job satisfaction	JS1	0.849	0.912	0.932	0.696
	JS2	0.719			
	JS3	0.839			
	JS4	0.877			
	JS5	0.844			
	JS6	0.868			
Job engagement	JE1	0.677	0.798	0.861	0.555
	JE2	0.683			
	JE3	0.804			
	JE4	0.808			
	JE5	0.741			
Organizational citizenship behavior	OCB1	0.708	0.816	0.865	0.523
	OCB2	0.713			
	OCB3	0.821			
	OCB4	0.745			
	OCB5	0.493			
	OCB6	0.809			
Knowledge sharing	KS1	0.811	0.861	0.900	0.643
	KS2	0.806			
	KS3	0.787			
	KS4	0.781			
	KS5	0.822			

<Table 5> Discriminant Validity Analysis Results

	DJ	PJ	IC	JE	JS	KS	OCB
Distributional justice	0.939						
Procedural justice	0.468	0.853					
Interactional justice	0.019	0.691	0.934				
Job engagement	0.609	0.286	-0.102	0.745			
Job satisfaction	0.678	0.238	-0.134	0.667	0.834		
Knowledge sharing	0.504	0.107	-0.214	0.594	0.702	0.802	
Organizational citizenship behavior	0.549	0.263	-0.079	0.640	0.708	0.644	0.723

* DJ: distributional justice, PJ: procedural justice, IC: interaction justice, JE: job engagement, JS: job satisfaction, KS: knowledge sharing, OCB: organizational citizenship behavior
** The diagonal values represent the square root of the mean-variance extraction, and the non-diagonal values represent the correlation coefficients between the variables.

<Table 6> Comparison of Adjustment Effects, R&D vs. non-R&D Units

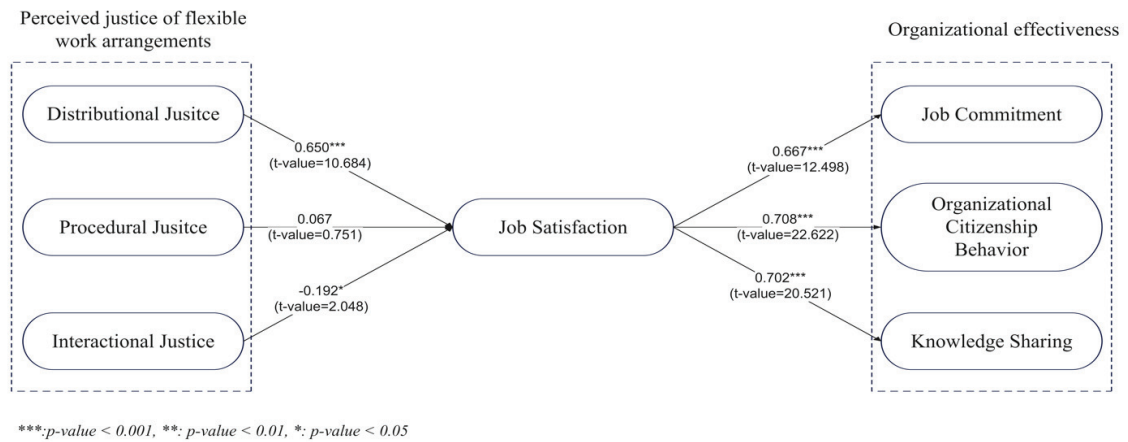
Perceived Justice on Job Satisfaction	Statistics	Unit Type		Result
		Non-R&D	R&D	
Distributional justice	Path coefficient	0.109	0.511	Accepted
	Standard error	0.179	0.085	
	Sample size	50	190	
	T-value	-2.129*		
Procedural justice	Path coefficient	0.492	0.239	Rejected
	Standard error	0.240	0.134	
	Sample size	50	190	
	T-value	0.879		
Interactional justice	Path coefficient	0.082	-0.317	Rejected
	Standard error	0.208	0.147	
	Sample size	50	190	
	T-value	1.311		

***: p-value < 0.001, **: p-value < 0.01, *: p-value < 0.05

sharing as shown in <Figure 1>. Among the perceived justice of flexible work arrangements in R&D organizations, only distributional justice was significant, while procedural justice and interactional justice did not support the hypothesis.

To assess organization effectiveness, we conducted an analysis on three key concepts: job commitment,

organizational citizenship behavior, and knowledge sharing. Our findings revealed a significant positive correlation between each of these concepts and job satisfaction, thereby providing support for hypotheses H4 through H6. These results suggest that flexible work arrangements help to increase organizational effectiveness through job satisfaction and dis-



<Figure 1> Hypotheses and Path Analysis Results

tributational fairness.

We further tested the interaction effect of perceived justice on job satisfaction to see if R&D organizations differed from non-R&D organizations, such as general office or sales organizations. Only distributive justice showed a statistically significant difference between the two groups, while procedural justice and interactional justice showed no difference between the groups. In this case, distributive justice in R&D organizations showed a higher path coefficient (R&D = 0.511, Non-R&D = 0.109, t-value = -2.129).

4.4. Discussion

The findings pertaining to perceptions of flexible work arrangements suggest that the impact of distributive justice is noteworthy. Specifically, employees hold the belief that appropriate compensation should accompany flexible work arrangements. For instance, there exists a prevalent perception that sacrificing the freedom to work alongside colleagues in a fixed location necessitates adequate financial remuneration, as opposed to having the ability to work

remotely with the aid of information technology such as artificial intelligence or virtual offices. On one hand, it was observed that perceived justice in terms of procedures and interactions had a limited effect on job satisfaction. This trend was stronger in R&D units.

The hypothesis that the perceived justice of the distribution of flexible work arrangements positively affects the job satisfaction of members in R&D organizations following the implementation of such arrangements (H1) is supported. This implies that when members perceive the distribution of flexible work arrangements as fair within their existing work system, they are more likely to view these arrangements as necessary and advocate for their continuation. This finding aligns with previous research, which demonstrates that employees with a perception of fairness in an organization tend to have positive attitudes towards organizational changes, including the introduction of flexible work arrangements (Chen and Fulmer, 2018).

It should be noted that the influence of procedural justice and interactional justice on job satisfaction in relation to flexible work arrangements is found

to be constrained. It is crucial to recognize that these findings do not undermine the significance of fair enforcement procedures, nor do they imply that efforts to persuade individuals within an organization are futile or insignificant. Instead, it is essential to highlight the necessity of providing tangible compensation, such as monetary rewards or benefits, to ensure equity between those who benefit from flexible work arrangements and those who do not, as supported by the outcomes of this study. In line with Klindžić and Marić (2019), our findings demonstrate that establishing a quantifiable and measurable level of rewards is a crucial condition for the success of flexible work arrangements.

The promise for facilitating more flexible work arrangements can be realized through the integration of artificial intelligence and metaverse technology (Choi, 2022). Nevertheless, there is a prevailing notion that the fairness of remote work is contingent upon the implementation of suitable constraints. The aforementioned perception is based on the belief that employees who make use of flexible work arrangements may demonstrate decreased levels of commitment and diminished participation in collaborative team endeavors as compared to their colleagues who operate in a traditional office setting (Raval, 2023). Therefore, it is crucial to implement transparent and data-driven systems for assessing fair levels of effort and involvement in collaborative endeavors including both office-based employees and individuals adopting flexible work arrangements. In an alternative approach, the restoration of justice can be facilitated through the implementation of rules and evidence-based limits on flexible work arrangements. The implications discussed in this study underscore the necessity for continued investigation into approaches and tactics pertaining to people analytics, particularly those that make use

of artificial intelligence (DiClaudio, 2019).

V. Conclusions

Given the comprehensive understanding of AI capabilities, it is anticipated that the significance of implementing flexible work arrangements, which aim to provide employees with increased autonomy over their work schedule and physical location, will continue to grow. The primary objective of flexible work arrangements is to provide employees greater liberty in terms of their work schedule and physical work environment. However, there is a lack of available information concerning the extent to which progressive organizations acknowledge and implement flexible work arrangements. Due to the absence of comprehensive study in this area, the identification of potential obstacles and the development of effective solutions for challenges that may arise during the implementation of artificial intelligence in progressive enterprises pose significant difficulties. Various challenges may develop during the application of artificial intelligence.

In this study, data was collected from employees of Korean companies that have implemented flexible work arrangements, with a total of 240 participants. The analysis revealed that flexible work arrangements had a positive organizational effectiveness on R&D units, which was mediated by job satisfaction. In-depth analysis reveals that the perceived distributional justice of flexible work arrangements plays a pivotal role in enhancing job satisfaction levels within R&D units, with notable differences observed when compared to non-R&D units.

The utilization of artificial AI technologies has the potential to facilitate the implementation of more adaptable work arrangements. Nevertheless, the

equity of using flexible work arrangement options is contingent upon the establishment of suitable boundaries. There exists a prevailing impression that individuals engaged in flexible work arrangements may exhibit lower levels of commitment and participation in team-based activities compared to their counterparts operating inside traditional office settings. Therefore, it is imperative to have transparent and data-driven systems in place to evaluate equitable effort and engagement in collaborative endeavors for both office-based and flexible employees. The implementation of regulations and evidence-based restrictions on flexible employment arrangements can contribute to the restoration of justice. This study emphasizes the necessity of further investigation into approaches of people analytics, particularly those that integrate artificial intelligence.

It is crucial to recognize the constraints of the conclusions elucidated in this scholarly article. The primary objective of this study is to examine the essential limitations that must be in place to effectively execute flexible work arrangements inside R&D units. The extensive use of flexible work arrangements dur-

ing the COVID-19 pandemic has been motivated by a range of variables, including the utilization of teleconferencing technologies, metaverses, and AI algorithms, notably facial recognition. This study did not ascertain particular technology pertaining to flexible work arrangements, instead relying on data obtained from a self-completion survey administered to individuals within firms that already employ a variety of such technologies. Subsequent investigations should enhance the outcomes of this study by examining the behavioral attributes of persons who make use of multi-period flexible work arrangements, utilizing log data obtained from various information systems.

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