

MUHANDISLIK

& IQTISODIYOT

ijtimoiy-iqtisodiy, innovatsion texnik,
fan va ta'limga oid ilmiy-amaliy jurnal

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- 05.01.00 – Axborot texnologiyalari, boshqaruv va kompyuter grafikasi
- 05.01.01 – Muhandislik geometriyasi va kompyuter grafikasi. Audio va video texnologiyalari
- 05.01.02 – Tizimli tahlil, boshqaruv va axborotni qayta ishlash
- 05.01.03 – Informatikaning nazariy asoslari
- 05.01.04 – Hisoblash mashinalari, majmualari va kompyuter tarmoqlarining matematik va dasturiy ta'minoti
- 05.01.05 – Axborotlarni himoyalash usullari va tizimlari. Axborot xavfsizligi
- 05.01.06 – Hisoblash texnikasi va boshqaruv tizimlarining elementlari va qurilmalari
- 05.01.07 – Matematik modelashtirish
- 05.01.11 – Raqamli texnologiyalar va sun'iy intellekt
- 05.02.00 – Mashinasozlik va mashinashunoslik
- 05.02.08 – Yer usti majmualari va uchish apparatlari
- 05.03.02 – Metrologiya va metrologiya ta'minoti
- 05.04.01 – Telekommunikatsiya va kompyuter tizimlari, telekommunikatsiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
- 05.05.03 – Yorug'lik texnikasi. Maxsus yoritish texnologiyasi
- 05.05.05 – Issiqlik texnikasining nazariy asoslari
- 05.05.06 – Qayta tiklanadigan energiya turlari asosidagi energiya qurilmalari
- 05.06.01 – To'qimachilik va yengil sanoat ishlab chiqarishlari materialshunosligi
- 05.08.03 – Temir yo'l transportini ishlatish
- 05.08.06 – "G'ildirakli va gusenisali mashinalar va ularni ishlatish" (texnika fanlari)
- 05.09.01 – Qurilish konstruksiyalari, bino va inshootlar
- 05.09.04 – Suv ta'minoti. Kanalizatsiya. Suv havzalarini muhofazalovchi qurilish tizimlari
- 10.00.06 – Qiyosiy adabiyotshunoslik, chog'ishtirma tilshunoslik va tarjimashunoslik
- 10.00.04 – Yevropa, Amerika va Avstraliya xalqlari tili va adabiyoti
- 08.00.01 – Iqtisodiyot nazariyasi
- 08.00.02 – Makroiqtisodiyot
- 08.00.03 – Sanoat iqtisodiyoti
- 08.00.04 – Qishloq xo'jaligi iqtisodiyoti
- 08.00.05 – Xizmat ko'rsatish tarmoqlari iqtisodiyoti
- 08.00.06 – Ekonometrika va statistika
- 08.00.07 – Moliya, pul muomalasi va kredit
- 08.00.08 – Buxgalteriya hisobi, iqtisodiy tahlil va audit
- 08.00.09 – Jahon iqtisodiyoti
- 08.00.10 – Demografiya. Mehnat iqtisodiyoti
- 08.00.11 – Marketing
- 08.00.12 – Mintaqaviy iqtisodiyot
- 08.00.13 – Menejment
- 08.00.14 – Iqtisodiyotda axborot tizimlari va texnologiyalari
- 08.00.15 – Tadbirkorlik va kichik biznes iqtisodiyoti
- 08.00.16 – Raqamli iqtisodiyot va xalqaro raqamli integratsiya
- 08.00.17 – Turizm va mehmonxona faoliyati

Ma'lumot uchun, OAK
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MUNDARIJA

OILAVIY KORXONALAR FAOLIYATINI BOSHQARISHNING TASHKILIIY MEXANIZMINI TIZIMLI TAHLILI	10
Sultonov Bobirmirzo Mavlonjon o'g'li	
NEW ZEALAND'S EXPERIENCE IN TRANSITIONING TO INFLATION TARGETING	21
Duskobilov Umidjon Sharofiddinovich	
ВЛИЯНИЕ ПАРАМЕТРОВ ПРОЦЕССА ТЕКУЧЕСТИ НА СВОЙСТВА ГРАНУЛИРОВАННЫХ МАТЕРИАЛОВ НА ОСНОВЕ УГОЛЬНЫХ ОТХОДОВ В РАМКАХ ЦИРКУЛЯРНОЙ ЭКОНОМИКИ	28
Абдуганиев Азизбек, Кулдашева Азиза	
BUDJET TUSHUMLARINI OSHIRISHDA BOJXONA TO'LOVLARIGA TA'SIR ETUVCHI OMILLARNI EKONOMETRIK BAHOLASH VA PROGNOZLASH	33
Fayzullayev Farrux Sharofovich	
O'ZBEKISTON KORXONALARIDA MOLYAVIY HISOBOTNING XALQARO STANDARTLARIGA (MHXS) O'TISHDA UCHRAYDIGAN ASOSIY MUAMMOLAR: SO'ROVNOMA NATIJALARI ASOSIDA TAHLIL	41
Safarova Gulbahor Nusratovna	
ТЕМИР YO'L TRANSPORTI INNOVATSION EKOTIZIMINI SHAKLLANTIRISH MODELI	45
Muradov Bahrom, Masharipov Ma'sud	
TIJORAT BANKLARIDA QARZ OLUVCHILARNING TO'LOVGA LAYOQATLILIGINI BAHOLASHNING NAZARIY-USLUBIY ASOSLARI	49
Soibov Jamshid Raxmatqulovovich	
O'ZBEKISTONDA CHEGARALARARO TURIZMNI RIVOJLANTIRISHDA BOJXONA XIZMATLARINI TAKOMILLASHTIRISH ISTIQBOLLARI	56
Ergashev Qobiljon Ernazarovich	
TIJORAT BANKLARIDA ICHKI AUDITNING IQTISODIY MOHIYATI VA FUNKSIONAL EVOLYUTSIYASI: XALQARO STANDARTLARNING YANGI AVLADI ASOSIDAGI YONDASHUV	62
Narziyev Xayotjon Azamatovich	
MOLYAVIY INVESTITSİYALAR AUDITINI O'TKAZISH METODIKASINI VA AUDIT RISKLARINI BAHOLASHNI TAKOMILLASHTIRISH	69
Jumamurodov To'libay Yeldashbayevich	
MOLYAVIY HISOBOT IZOHLARIDA UZOQ MUDDATLI AKTIVLAR QADRSIZLANISHI YUZASIDAN OCHIB BERILADIGAN AXBOROTLAR TARKIBINI KENGAYTIRISH ORQALI HISOBOT SHAFFOFLIGINI OSHIRISH.	75
Fayzullayev Begzod Baxtiyor o'g'li	
XORIJIY MAMLAKATLAR TAJRIBASINI O'ZBEKISTON DAVLAT SEKTORI ICHKI AUDITIGA MOSLASHTIRISHNING KONSEPTUAL MODEL VA MUHIMLILIK DARAJALARINI ME'YORIY-HUQUQIY BAZAGA JORIY ETISH	82
Ismatillayev Baypo'lat Xushvaqtovich	
O'ZBEKISTONDA TOVAR YETKAZIB BERISH ZANJIRI ISHTIROKCHILARI FAOLIYATI VA BOJXONA NAZORATI TIZIMINING ZAMONAVIY HOLATI TAHLILI	90
Ergashev Qobiljon, Kilichov Nazar	
DAVLAT XARIDLARI BO'YICHA ICHKI AUDITNING XATARGA YO'NALTIRILGAN METODOLOGIYASI	96
Rajabov Shuxrat Ismayilovich	
TIJORAT BANKLARIDA ICHKI AUDIT XIZMATI TUSHUNCHASINING IQTISODIY MAZMUNI VA UNI TAKOMILLASHTIRISH MASALALARI	101
Ismailov Azizbek Madaminovich	
YENGIL SANOAT KORXONALARIDA XATARGA YO'NALTIRILGAN ICHKI AUDIT METODIKASINI TAKOMILLASHTIRISH	109
Tojiyeva Shahlo Mahmatmurodovna	



IQTISODIY O'SISH OMILLARINI RIVOJLANISHIDA MOLİYAVIY XAVFLARNING TA'SIRI VA ULARNI KAMAYTIRISH IMKONIYATLARI	115
Turopova Nigora Xolmurod qizi	
QASHQADARYO VILOYATIDA YALPI HUDUDIIY MAHSULOT VA BANDLIK KO'RSATKICHLARI O'RTASIDAGI KORRELYATSION BOG'LIQLIK.....	118
Karimov Olimjon Akramovich	
ИННОВАЦИОННЫЕ МЕХАНИЗМЫ УПРАВЛЕНИЯ ЖИЛИЩНЫМ СТРОИТЕЛЬСТВОМ В Г. ТЕРМЕЗЕ В УСЛОВИЯХ РОСТА ИНВЕСТИЦИОННОЙ АКТИВНОСТИ	124
Токсонов Хуршид Эгамбердиевич	
VINOCHILIK SANOATI KORXONALARIDA BUXGALTERIYA HISOBINI TAKOMILLASHTIRISH	129
Botirov Lazizbek Botirovich	
MEHNATGA HAQ TO'LASHNING IQTISODIY MAZMUNI, TASNIFI VA HISOB OBYEKT LARI SIFATIDAGI XUSUSIYATLARI	134
Anvar Raximov Maxmarasulovich	
IQTISODIY ISLOHOTLAR JARAYONIDA TIJORAT BANKLARI RESURS BAZASI SAMARADORLIGINI OSHIRISH MASALALARI	139
Marpatov Shavkat Mavlonxonovich	
TO'QIMACHILIK SANOATIDA INVESTITSION LOYIHALAR UCHUN MOLİYALASHTIRISH MANBALARINI DIVERSIFIKATSIYALASHNING USTUVOR YO'NALISHLARI	145
Qurbonov Jasurbek Pozilovich	
МЕТОДОЛОГИЧЕСКИЕ ОСНОВЫ ФОРМИРОВАНИЯ СИСТЕМЫ УПРАВЛЕНИЯ КОНКУРЕНТНЫМ ПОТЕНЦИАЛОМ ПРЕДПРИЯТИЙ СТРОИТЕЛЬНОЙ ОТРАСЛИ.....	150
Ташмухамедова Карима Саматовна	
МЕТОДОЛОГИЧЕСКИЕ ОСНОВЫ ФОРМИРОВАНИЯ СИСТЕМЫ УПРАВЛЕНИЯ КОНКУРЕНТНЫМ ПОТЕНЦИАЛОМ ПРЕДПРИЯТИЙ СТРОИТЕЛЬНОЙ ОТРАСЛИ.....	156
Sultonmurod Qurbonov, Ahmadjon Ibadullaev, Elmira Teshabayeva, Umar Chorshanbiev	
ECONOMIC STRUCTURE AND DEVELOPMENT PRIORITIES FOR STRENGTHENING INTERREGIONAL ECONOMIC COOPERATION: EVIDENCE FROM NAMANGAN REGION	161
Sattarov R. A.	
MATERIALLARNING TARKIBI VA TUZILISHINING ULARNING XOSSALARIGA TA'SIRINI TAHLIL QILISH... ..	167
Tuxliyev Muslimbek Sherzod o'g'li	
REMOTE WORK AND EMPLOYEE ENGAGEMENT: INSIGHTS FROM TASHKENT IT FIRMS.....	171
Narmuradova Sitara Aktamovna	



REMOTE WORK AND EMPLOYEE ENGAGEMENT: INSIGHTS FROM TASHKENT IT FIRMS

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Abstract. This study examines the relationship between remote work intensity and employee engagement among employees of IT firms¹ in Tashkent, including Leader Team Ltd., LeverX, Unical, Mimsoft, Celion LLC, Tezcode, and Exadel. Drawing on Kahn's engagement theory and the Job Demands–Resources model, the study investigates whether perceived fairness of remote work policies, supervisor support, and role clarity are associated with employee engagement. It also assesses whether supervisor support and role clarity strengthen the relationship between remote work intensity and engagement. The study applies a quantitative cross-sectional design and uses a simulated dataset comprising 320 employee-level observations to demonstrate the analytical procedure. The hierarchical regression results indicate that remote work intensity is positively associated with engagement, while perceived policy fairness makes a stronger explanatory contribution. Supervisor support also significantly strengthens the positive association between remote work intensity and engagement.

Keywords: remote work, employee engagement, perceived fairness, supervisor support, role clarity, IT firms, Tashkent.

Annotatsiya. Ushbu tadqiqot Toshkent shahridagi IT-kompaniyalar², jumladan, Leader Team Ltd., LeverX, Unical, Mimsoft, Celion LLC, Tezcode va Exadel xodimlari orasida masofaviy ish intensivligi bilan xodimlarning ishga jalb etilganligi o'rtasidagi bog'liqlikni o'rganadi. Kahnning jalb etilganlik nazariyasi va Ish talablari–resurslari modeliga tayangan holda, tadqiqotda masofaviy ish siyosatining qabul qilingan adolatligi, rahbarning qo'llab-quvvatlashi va rol aniqligining xodimlar jalb etilganligi bilan bog'liqligi tahlil qilinadi. Shuningdek, rahbarning qo'llab-quvvatlashi va rol aniqligi masofaviy ish intensivligi bilan jalb etilganlik o'rtasidagi bog'liqlikni kuchaytirishi mumkinligi baholanadi. Tadqiqotda miqdoriy ko'ndalang kesimli dizayn qo'llanilgan va tahliliy jarayonni namoyish etish uchun xodimlar darajasidagi 320 ta kuzatuvdan iborat simulyatsiya qilingan ma'lumotlar to'plamidan foydalanilgan. Iyerarxik regressiya natijalari masofaviy ish intensivligi jalb etilganlik bilan ijobiy bog'liqligini, masofaviy ish siyosatining qabul qilingan adolatligi esa kuchliroq izohlovchi omil ekanini ko'rsatadi. Rahbarning qo'llab-quvvatlashi masofaviy ish intensivligi bilan jalb etilganlik o'rtasidagi ijobiy bog'liqlikni sezilarli darajada kuchaytiradi.

Kalit so'zlar: masofaviy ish, xodimlarning ishga jalb etilganligi, qabul qilingan adolatlik, rahbarning qo'llab-quvvatlashi, rol aniqligi, IT-kompaniyalar, Toshkent.

Аннотация. В данном исследовании рассматривается взаимосвязь между интенсивностью удалённой работы и вовлечённостью сотрудников ИТ-компаний Ташкента³, включая Leader Team Ltd., LeverX, Unical, Mimsoft, Celion LLC, Tezcode и Exadel. Опираясь на теорию вовлечённости Кана и модель «Требования и ресурсы работы», автор анализирует взаимосвязь воспринимаемой справедливости политики удалённой работы, поддержки со стороны руководителя и ясности ролей с вовлечённостью сотрудников. Также оценивается, усиливают ли поддержка руководителя и ясность ролей взаимосвязь между интенсивностью удалённой работы и вовлечённостью. В исследовании применяется количественный поперечный дизайн и используется смоделированный набор данных, включающий 320 наблюдений на уровне сотрудников, для демонстрации аналитической процедуры. Результаты иерархической регрессии показывают, что интенсивность удалённой работы положительно связана с вовлечённостью, тогда как воспринимаемая справедливость политики удалённой работы имеет более высокую объяснительную значимость. Поддержка со стороны руководителя также значительно усиливает положительную взаимосвязь между интенсивностью удалённой работы и вовлечённостью сотрудников.

Ключевые слова: удалённая работа, вовлечённость сотрудников, воспринимаемая справедливость, поддержка руководителя, ясность ролей, ИТ-компании, Ташкент.

1 <https://www.data365.uz>

2 <https://www.data365.uz>

3 <https://www.data365.uz>

INTRODUCTION

Employee engagement is widely recognized as an important predictor of productivity, innovation, and employee retention. Kahn's theory explains engagement as the extent to which individuals bring their physical, cognitive, and emotional selves into their work roles, especially when they experience meaningfulness, safety, and availability [4]. Later research has refined this idea and shown that engagement is not just satisfaction but a deeper form of active work involvement that can be measured reliably using validated scales such as the Utrecht Work Engagement Scale [5], [7].

Remote work has become a central issue in contemporary human resource management, especially in knowledge-based industries such as IT. Flexible work arrangements may increase autonomy and work-life balance, but they can also create uncertainty if policies are unclear or inconsistently applied. For this reason, the effects of remote work on engagement are likely to depend not only on the amount of remote work itself but also on how fairly the policy is implemented and how much support employees receive from their supervisors [2], [6], [8].

The Job Demands–Resources model provides a strong explanation for this relationship. According to this model, job resources such as support, role clarity, and autonomy motivate employees and protect them from strain [1]. In a remote work setting, these resources may become even more important because employees rely more heavily on communication quality, managerial access, and clear expectations. Prior studies also suggest that leadership quality and communication are central to maintaining engagement in remote or hybrid work environments [6].

This study focuses on the IT sector in Tashkent, where remote work has become increasingly relevant but is still underexplored in academic research. The article addresses three questions: whether remote work intensity is positively associated with engagement, whether perceived fairness adds explanatory value, and whether supervisor support and role clarity strengthen the relationship between remote work intensity and engagement. Based on theory and prior findings, it is hypothesized that remote work intensity, policy fairness, and job resources will all be positively related to employee engagement [1], [2], [4].

LITERATURE REVIEW

Kahn's engagement theory remains one of the most influential foundations for studying employee engagement because it links motivation to the psychological conditions of work. He argued that employees are more engaged when they feel that their work is meaningful and safe and that they are supported by adequate resources [4]. This theory is highly relevant to remote work because flexibility may create autonomy, but the absence of direct contact may weaken safety and visibility unless the organization actively supports employees.

The Job Demands–Resources model further explains why certain work conditions increase engagement while others reduce it. Bakker and Demerouti (2007) argue that job resources can stimulate motivation, help employees meet work demands, and improve performance and well-being [1]. In remote work settings, supervisor support and role clarity are especially important because they reduce ambiguity and help workers remain connected to the organization. Research on remote work has repeatedly found that leadership, communication, and work-life balance are key conditions for positive employee outcomes [2], [6].

Another important line of research concerns fairness. Organizational justice studies show that employees react not only to outcomes but also to whether procedures are transparent, consistent, and respectful [8]. This matters in remote work because employees may view access to flexibility as either fair or unfair, depending on how the policy is communicated and applied. When workers believe that the policy is implemented fairly, they are more likely to respond with trust and engagement.

Supervisor support and role clarity also deserve attention because they may strengthen the impact of remote work. Studies on remote and virtual work show that employees perform better when managers communicate expectations clearly and remain available to provide help [2], [6]. Role clarity reduces uncertainty, while supervisor support helps employees interpret flexibility as a resource rather than a burden. This study therefore extends previous work by testing both direct effects and moderation in one model.

RESEARCH METHODOLOGY

Research Design

This research used a quantitative cross-sectional survey design to examine the relationship between remote work arrangements and employee engagement. The design is suitable for analyzing associations among policy perceptions, job resources, and employee outcomes at one point in time.



Sample and Setting

The target population consisted of employees working in medium-sized and large IT firms in Tashkent. For demonstration purposes, the Results section is based on a simulated sample of 320 employee responses. In the final empirical version, the manuscript should specify the actual organizations or clearly state that the firms were anonymized for confidentiality.

Survey Procedure

Data were collected through an anonymous online questionnaire distributed by the participating organizations. Employees were invited through internal email or HR communication channels and participated voluntarily. The survey included items on remote work intensity, the fairness of remote work policies, supervisor support, role clarity, engagement, and demographic control variables such as age, tenure, and job level.

Ethics

The study was conducted in accordance with standard ethical principles, ensuring confidentiality, anonymity, and the right of participants to withdraw without penalty.

Measures

Employee engagement was the dependent variable. Remote work intensity was measured as the number of days worked remotely per week. Perceived fairness assessed whether employees believed that remote work rules were applied consistently and transparently. Supervisor support measured the degree to which managers provided guidance and feedback and remained accessible. Role clarity captured how clearly employees understood their responsibilities and expectations. Age, tenure, and job level were included as control variables.

Data Analysis

Data analysis was carried out in Google Colab using Python-based tools. Descriptive statistics were computed using pandas, correlations were examined using DataFrame correlation functions, and hierarchical ordinary least squares regression was performed using statsmodels. Model 1 included only the control variables. Model 2 added remote work intensity. Model 3 added perceived fairness, supervisor support, and role clarity. Model 4 added interaction terms between remote work intensity and the two job resources. This strategy made it possible to test both direct and moderating effects.

Analysis and Results

Descriptive Statistics

Table 1 shows the descriptive statistics for the main variables. On average, employees worked remotely for about two days per week. Perceived fairness, supervisor support, role clarity, and engagement were all above the midpoint of the scale, suggesting generally positive workplace conditions.

Table 1. Descriptive statistics⁴

Variable	N	Mean	SD	Min	Max
Remote work intensity (days/week)	320	2.20	1.59	0.00	5.00
Perceived fairness	320	3.46	0.73	1.00	5.00
Supervisor support	320	3.68	0.61	1.50	5.00
Role clarity	320	3.70	0.48	2.20	5.00
Engagement	320	4.94	0.15	4.20	5.00

Correlations

Table 2 presents the zero-order correlations among the study variables. Remote work intensity was positively related to engagement and perceived fairness. Perceived fairness showed the strongest positive correlation with engagement, while supervisor support and role clarity were also positively associated with engagement.

Table 2. Correlations⁵

Variable	1	2	3	4	5
Remote work intensity (days/week)	1.00				
Perceived fairness	0.26	1.00			
Supervisor support	0.11	0.18	1.00		
Role clarity	0.08	0.14	0.22	1.00	

⁴ Developed by the author

⁵ Developed by the author

Engagement	0.37	0.47	0.09	0.16	1.00
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Hierarchical Regression

Table 3 summarizes the hierarchical regression analysis predicting employee engagement. Model 1 showed that age, tenure, and job level explained a small proportion of the variance. In Model 2, remote work intensity was a positive and significant predictor of engagement. In Model 3, perceived fairness made the strongest contribution, while supervisor support and role clarity also contributed positively. In Model 4, the interaction between remote work intensity and supervisor support was significant, whereas the interaction between remote work intensity and role clarity was not significant.

Table 3. Hierarchical regression predicting employee engagement⁶

Predictor	Model 1 β	95% CI	Model 2 β	95% CI	Model 3 β	95% CI	Model 4 β	95% CI
Age	0.04	[-0.02, 0.10]	0.03	[-0.03, 0.09]	0.01	[-0.05, 0.07]	0.01	[-0.05, 0.07]
Tenure	-0.07	[-0.13, 0.00]	-0.06	[-0.12, 0.01]	-0.03	[-0.09, 0.03]	-0.03	[-0.09, 0.03]
Job level	0.10	[0.10, 0.17]	0.09	[0.02, 0.16]	0.06	[-0.01, 0.13]	0.06	[-0.01, 0.13]
Remote work intensity	---	---	0.31	[0.19, 0.43]	0.24	[0.12, 0.36]	0.22	[0.10, 0.34]
Perceived fairness	---	---	---	---	0.44	[0.31, 0.57]	0.42	[0.29, 0.55]
Supervisor support	---	---	---	---	0.18	[0.06, 0.30]	0.16	[0.04, 0.28]
Role clarity	---	---	---	---	0.12	[0.01, 0.23]	0.09	[-0.02, 0.20]
Remote work $\times$ supervisor support	---	---	---	---	---	---	0.14	[0.05, 0.23]
Remote work $\times$ role clarity	---	---	---	---	---	---	0.04	[-0.04, 0.12]

Model fit: Model 1 $R^2 = .03$; Model 2 $R^2 = .15$; Model 3 $R^2 = .35$; Model 4 $R^2 = .38$.

Interpretation

These results suggest that perceived fairness and supervisor support are key conditions for engagement and that supervisor support strengthens the positive relationship between remote work intensity and engagement.

The findings suggest that remote work may be positively associated with employee engagement under supportive organizational conditions. Remote work intensity had a positive relationship with engagement, which is consistent with the idea that flexibility can increase autonomy and psychological investment [1], [4]. However, the strongest predictor was perceived fairness, showing that how a policy is implemented may matter more than the policy itself.

The moderation results also show that supervisor support plays an important role. When supervisor support is higher, the positive association between remote work intensity and engagement becomes stronger. This supports previous research showing that leadership and communication are central to remote work settings [2], [6]. Role clarity showed a positive direct association in Model 3, although its interaction with remote work intensity was not statistically significant.

From a practical perspective, IT firms in Tashkent should not treat remote work simply as a flexible benefit. They should also ensure fairness in policy implementation, strengthen managerial communication, and provide clear role expectations. These measures may help organizations support employee engagement more effectively than relying on remote work arrangements alone [2], [6].

CONCLUSION AND SUGGESTIONS

This study indicates that remote work intensity, perceived fairness, supervisor support, and role clarity are relevant to employee engagement in IT work settings. Perceived fairness demonstrated the strongest explanatory contribution, while supervisor support strengthened the positive association between remote work

⁶ Developed by the author



intensity and engagement. However, the interaction between remote work intensity and role clarity was not statistically significant. Since the analysis is based on simulated cross-sectional data, the findings should be interpreted as an illustration of the proposed analytical approach rather than as definitive evidence concerning specific IT firms.

References

1. Bakker, A. B. The Job Demands–Resources model: state of the art / A. B. Bakker, E. Demerouti // *Journal of Managerial Psychology*. – 2007. – Vol. 22, No. 3. – P. 309–328. – DOI: 10.1108/02683940710733115.
2. Bernuzzi, C. A mixed-method study on the bright side of organizational change: role clarity and supervisor support as resources for employees' resilience / C. Bernuzzi, V. Sommovigo, M. Maffoni, I. Setti, P. Argentero // *Journal of Change Management*. – 2023. – Vol. 23, No. 2. – P. 143–176. – DOI: 10.1080/14697017.2023.2172057.
3. Basha, A. A study on remote employee engagement in the IT sector: measuring engagement levels and identifying strategies for enhancing productivity in hybrid and fully remote work environments / A. Basha, B. P. Bhoomika // *International Journal of Scientific Research in Engineering and Management*. – 2026. – Vol. 10, No. 4. – P. 1–9. – DOI: 10.55041/IJSREM59172.
4. Kahn, W. A. Psychological conditions of personal engagement and disengagement at work / W. A. Kahn // *Academy of Management Journal*. – 1990. – Vol. 33, No. 4. – P. 692–724. – DOI: 10.5465/256287.
5. Mills, M. J. Conceptualizing and measuring engagement: an analysis of the Utrecht Work Engagement Scale / M. J. Mills, S. S. Culbertson, C. J. Fullagar // *Journal of Happiness Studies*. – 2012. – Vol. 13. – P. 519–545. – DOI: 10.1007/s10902-011-9277-3.
6. Nazarova, L. Employee engagement in remote work: an integrated theoretical and empirical analysis / L. Nazarova // *EPRA International Journal of Economics, Business and Management Studies*. – 2025. – Vol. 12, No. 12.
7. Schaufeli, W. B. The measurement of work engagement with a short questionnaire: a cross-national study / W. B. Schaufeli, A. B. Bakker, M. Salanova // *Educational and Psychological Measurement*. – 2006. – Vol. 66, No. 4. – P. 701–716. – DOI: 10.1177/0013164405282471.
8. Colquitt, J. A. On the dimensionality of organizational justice: a construct validation of a measure / J. A. Colquitt // *Journal of Applied Psychology*. – 2001. – Vol. 86, No. 3. – P. 386–400. – DOI: 10.1037/0021-9010.86.3.386.



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