

## IMPACT OF PERSONAL DEMOGRAPHICS ON JOB SATISFACTION AND WORK-LIFE BALANCE OF THE TECHNICAL PERSONNEL WORKING AT CONSTRUCTION SITES

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### Abstract

The well-being and productivity of the technical personnel working at the construction sites are highly affected by job satisfaction (JS) and work-life balance (WLB). Numerous studies have been conducted on various aspects of JS and WLB, however, empirical studies on the impacts of personal demographics are scanty. This paper aims to explore the technical personnel's perceptions of JS and WLB by determining (1) the significant differences in the satisfaction levels and (2) any significant clusters based on personal demographics. Data were collected from 307 respondents and analysed using the Mann-Whitney U test and Cluster Analysis. The results reveal that technical personnel, who are older than 29, married, work at the office rather than the construction site, work less than 54 hours a week, and have children, are significantly more satisfied in terms of workload. It is noteworthy that male and single technical personnel, who work at the office rather than the construction site and work less than 54 hours a week, are significantly more satisfied regarding chances for personal development. As a result of the cluster analysis, three clusters were formed concerning JS. Additionally, three clusters were formed for WLB factors and gender. The main contributions of the study are (1) a comprehensive understanding of the impact of demographics on JS and WLB and (2) recommendations on how JS and WLB of the technical personnel can be improved at the construction sites.

**Keywords:** Technical staff working at sites, Work-life balance, Work related stress factors, Gender inequality, Job satisfaction

## KİŞİSEL DEMOGRAFİNİN İNŞAAT SAHALARINDA ÇALIŞAN TEKNİK PERSONELİN İŞ TATMİNİ VE İŞ-YAŞAM DENGESİNE ETKİSİ

### Özet

Şantiyelerde çalışan teknik personelin refahı ve verimliliği, iş memnuniyeti (JS) ve iş-yaşam dengesinden (WLB) büyük ölçüde etkilenmektedir. JS ve WLB'nin çeşitli yönleri üzerine çok sayıda çalışma yapılmıştır, ancak kişisel demografik özelliklerin etkilerine ilişkin ampirik çalışmalar yetersizdir. Bu makale, (1) memnuniyet seviyelerindeki önemli farklılıkları ve (2) kişisel demografik özelliklere dayalı önemli kümelenmeleri belirleyerek teknik personelin JS ve WLB algılarını araştırmayı amaçlamaktadır. Veriler 307 katılımcıdan toplanıp ve Mann-Whitney U testi ve Küme Analizi kullanılarak analiz edilmiştir. Sonuçlar, 29 yaş üstü, evli, şantiye yerine ofiste çalışan, haftada 54 saatten az çalışan ve çocuk sahibi olan teknik personelin iş yükü açısından anlamlı düzeyde daha memnun olduğunu ortaya koymaktadır. Şantiye yerine ofiste çalışan ve haftada 54 saatten az çalışan erkek ve bekar teknik personelin kişisel gelişim fırsatları konusunda anlamlı düzeyde daha memnun olduğu dikkat çekiyor. Kümeleme analizi sonucunda JS ile ilgili üç küme oluşturulmuştur. Ayrıca WLB faktörleri ve cinsiyet için de üç küme oluşturulmuştur. Çalışmanın ana katkıları (1) demografik özelliklerin JS ve WLB üzerindeki etkisinin kapsamlı bir şekilde anlaşılması ve (2) teknik personelin JS ve WLB'sinin şantiyelerde nasıl geliştirilebileceğine dair önerilerdir.

**Anahtar Kelimeler:** Şantiyelerde çalışan teknik personel, İş-yaşam dengesi, İşle ilgili stres faktörleri, Cinsiyet eşitsizliği, İş tatmini

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## 1. Introduction

The construction sector is recognized for its challenging work atmosphere, which can cause substantial stress and burnout among its personnel. Yet, prior studies have indicated that job satisfaction and balance between work and personal life can have a significant impact on reducing stress levels and increasing overall well-being [1-3]. Workload, payment, job security, compensation, and opportunities for career advancement are crucial determinants of job satisfaction in the construction sector [4, 5]. Furthermore, attaining a satisfactory work-life balance has been identified as a major contributor to the contentment and retention of employees [6, 7]. Putting work-life balance policies in place can enhance productivity and decrease absenteeism among construction workers [8]. In addition, the behavior of supervisors who provide family support may mediate the relationship between work-life balance and job satisfaction in small and medium-sized enterprises. Collectively, it is evident that job satisfaction and work-life balance bear significance in the construction sector. By prioritizing these factors, employers can establish a positive working environment that benefits both employees and the organization as a whole. Nonetheless, significant gaps still exist in our comprehension of job satisfaction and work-life balance within the construction industry. Further investigation is required to ascertain the impact of varying job satisfaction and work-life balance factors and policies on employee well-being and productivity [9] to ascertain the effective implementation of work-life balance policies in the construction sector.

The job satisfaction and work-life balance of employees in the construction industry, as well as other sectors, can vary depending on various factors including job type, working hours, and environment. Nonetheless, some general differences can be discerned. Construction sites are frequently linked with lengthy working hours, arduous labor, and exposure to dangerous substances. These elements may cause heightened levels of stress and tiredness among construction workers, which can have adverse effects on their work-life equilibrium [10]. Conversely, employees belonging to other industries might enjoy more adjustable schedules and less demanding physical work, leading to an improved work-life balance [11]. However, it is essential to acknowledge that maintaining a balance between work and personal life is a multifaceted matter influenced by several factors beyond the scope of occupation. Family obligations, financial restrictions, and individual preferences all have a part to play in achieving an individual's work-life equilibrium [6].

Previous studies have sought to evaluate job satisfaction and work-life balance, however, empirical studies on the impacts of personal demographics on job satisfaction and work-life balance are scanty.

This paper aims to explore the technical personnel's perceptions of JS and WLB by determining (1) the

significant differences in the satisfaction levels and (2) any significant clusters based on personal demographics. Mann-Whitney U test was used to reveal the similarities and differences in the technical personnel's satisfaction levels using binary groups of gender, age, marital status, having/not having children, experience, work location, weekly working hours, and the number of leave days per month. Additionally, cluster analysis was used to reveal the significant groupings of technical personnel based on their levels of job satisfaction and satisfaction levels of work-life balance.

## 2. Literature Review

### 2.1. Job Satisfaction

Job satisfaction is the level of contentment an employee experiences due to the work she/he creates. This feeling mainly depends on the individual's perception of satisfaction. The sense of satisfaction cannot be observed by others, it is a sensation of happiness and inner peace that can only be felt, defined, and expressed by the individual who experiences those feelings [12]. Job satisfaction is an employee's feeling of positive emotions when evaluating his/her job or job experience [13]. According to Wilson (1995), job satisfaction is determined by the value attributed to the job, educational opportunities related to the work, and chances to use personal qualifications during the process [14]. Three major aspects of job satisfaction are (1) it is an emotional response to a certain situation related to the job, hence it cannot be observed but expressed, (2) it is determined by the extent of the expectations met and the needs covered and (3) represents various attributes (e.g., the work in its essence, income, promotion opportunities, management methods, colleagues) related to each other [15, 16].

The importance of the job satisfaction concept began to be appreciated in the early 1900s. It has been related to life satisfaction and thus directly affects mental and physical health. The factors affecting job satisfaction may be categorized into individualistic and job-related factors. Individualistic factors are the age, gender, marital status, race, and education of the employee. Also, the intelligence, sophistication level, and talents of the one define how satisfied he/she could be in a particular job. On the other hand, job-related factors are coworkers and peers, pay, attitude of supervisors, job security, opportunities for personal development, rational responsibility distribution, and serenity of the workplace. Job-related factors are more important for job satisfaction as the employee spending most of his/her time in the workplace, eventually is affected by the environment (Table 1).

People seem to be more productive when they are happy and enjoying the work they are carrying out. To maintain this, the companies try to motivate their employees by using some professional techniques such as organizing extracurricular activities. Job satisfaction is directly related to one's well-being, so to increase the work performance of an individual managers should aim to

enhance his/her job satisfaction. One of the most important qualifications for a manager to obtain is the ability to recognize the employees' needs and respond conveniently.

Companies' prominent investment is their employees as they are not only associated financially but also sharing information and resources. They invest in their employees through money and time until they are trained and ready to take responsibility. This investment pays off in great deals, but only if the motivation of the employee is sustained, only then, the employee who is trained and qualified for the job would be fruitful for the company.

If job satisfaction could not be obtained, there would be consequences such as absence, lateness, poor productivity, violence at the workplace, and disorders in the employees' psychological and physical state. Under these conditions, discomfort environment occurs at the workplace resulting in lousy production. To sum up, job satisfaction is crucial to both the employee and the company by means of welfare and productivity. Researches written on job satisfaction factors specific to the construction industry are summarized in Table 1.

Table 1. Job Satisfaction Factors in the Literature

Factors	References
Coworkers and peers	[17] [18]
Pay	[16] [17]
Benefits, promotions	[[16] 17]
Job security	[16] [17]
Support and guidance from the supervisor	[17] [19]
Opportunity for personal development	[16] [19]
Respect and fair treatment received from superiors	[16] [17]
Challenge in the job	[16] [19]
Feeling of accomplishment you get from doing your job	[16] [17]
Flex time	[16]
The leadership provided by your superiors	[17]
Ability to work independently	[17]
Problems and pressure in the job	[16]
The educational opportunities and support available	[17]
Feedback you get from others	[17]
Amount of the responsibility	[17]
Role ambiguity and conflict	[21]
Internal and external networks	[20]
Consistency	[22]

## 2.2. Work-Life Balance

The concept of work-life balance (WLB) is defined as having control over one's working life and balancing responsibilities between home and work while maintaining flexibility and participating in sociable and individual activities outside of work [23]. This balance is achieved and sustained by minimizing the conflict between work and personal life roles, as stated by Clark (2010) [24]. Numerous and diverse roles must be

fulfilled throughout a lifetime, resulting in the emergence of work-life conflict when attempting to fulfill multiple roles concurrently [25]. Merrill (2021) claims that life is dynamic and subject to change, necessitating adaptation to meet new challenges [26]. These challenges include finding the time to complete tasks and maintaining the balance between work and personal life. Maintaining a balance between prominent spheres of life, including work, family, close friendships, and recreational activities, is vital. Implementing work-life balance (WLB) strategies elevates the quality of life and psychological well-being. Improved employee morale positively influences their productivity and commitment. Furthermore, a substantial reduction in employee absenteeism is a noticeable outcome. In addition, achieving work-life balance is crucial for promoting the well-being of children [27]. The key determinants impacting an employee's work-life balance include the quantity and quality of time spent with loved ones, working hours, annual leave, childcare, marital status, adaptability, and selflessness [22]. Researches written on work-life balance factors specific to the construction industry are summarized in Table 2.

Table 2. Work-Life Balance Factors in the Literature

Factors	References
Amount of time with family/friends	[16] [17] [28] [29]
Working hours	[17] [28]
Number of holidays	[17] [28]
Child care support	[17]
Time away from home	[17]
Educational value of your children's activities	[17]
Marital status	[22]

## 3. Materials and Methods

The research gathered information by conducting in-person interviews with 399 technical personnel employed at construction sites in Istanbul, out of which only 307 respondents were considered statistically relevant. The study's survey comprised 24 questions that encompassed open-ended, multiple-choice, yes/no, and Likert-based questions. The initial segment of the survey comprised 14 questions. Its purpose was to ascertain the profile of employees by gathering their demographic and professional information. The latter part was dedicated to assessing the working conditions on-site with the help of a Likert scale. To establish the pertinent questionnaire factors, specific questions, and scales were selected based on prior research. These have been previously employed in numerous studies on this topic and have undergone validity analysis [21, 30-33]. To ensure reliability in the field study data, participant responses were internally consistent and tested using the Cronbach Alpha ( $\alpha$ ) statistical analysis procedure. Both Carfio and Perla (2008) and Jamieson (2004) suggest that non-parametric tests be used for Likert data analysis [34, 35].

As such, this study employed the Mann-Whitney U test using IBM SPSS version 25.

The Mann-Whitney U test is a non-parametric statistical test utilized to compare two independent groups of data, often determining whether there is a notable difference between the means of two groups. In the context of job satisfaction, the Mann-Whitney U test could be utilized to contrast the job contentment of two groups of workers, for example, those laboring in different departments or those with various levels of experience [36, 37].

Additionally, cluster analysis was performed on the dataset. Cluster analysis is a technique that allows for the classification of study units based on their similarities, providing insights into the shared characteristics of the units and enabling general definitions of these classes to be made [38]. The primary goal of cluster analysis is to form homogeneous groups of objects described by a diverse range of characteristics [39, 40]. While it is generally assumed that data in cluster analysis should follow a normal distribution, the principle of normality is still applicable, and the normality of distance values appears to be adequate. Additionally, there is no requirement regarding the covariance matrix [41]. In cluster analysis, grouping is done according to similarities and differences. The inputs for the similarity measures can be either the need for which similarity is calculated in the data or the measure itself [42]. Cluster analysis was performed in this study using a two-step algorithm on IBM SPSS version 25.

Employed to cluster comparable objects or data points in a group together, cluster analysis is a statistical methodology. Cluster analysis is a versatile tool applicable to market research, customer segmentation, and research on job satisfaction and work-life balance. Concerning job satisfaction, it can group employees based on their levels of job satisfaction and identify common characteristics between the groups [43].

## 4. Findings

### 4.1. Demographic Information

The demographic profile of the participants is shown in Table 3. General characteristics of the participants suggest that they are mostly married (64.0%) technical personnel, aged between 26 and 34 years with a mean age of 29.9 for women and 33.5 for men. They mostly work for the principal contractor (64.1%) and possess 5 to 10 years of experience in the construction sector. 50.1% reported witnessing work-related accidents on their sites, and 5% faced lawsuits. Occupational health and safety specialists were present on 93% of the sites. Approximately a quarter of the female respondents reported experiencing gender-based discrimination for various reasons. Among the male participants, ten admitted to discriminating against women based on challenges specific to the construction industry and perceived lack of ambition among women. It is noteworthy that long working hours and inadequate days off are pervasive issues within this sector.

Table 3. Profile of Participants (Values in parentheses are %)

		Female	Male	Total
Age	Average $\pm$ Std. Deviation	29.9 $\pm$ 6.3	33.5 $\pm$ 9.5	31,8 $\pm$ 8,3
	Minimum	21.0	23.0	21,0
	Maximum	56.0	68.0	68,0
Marital status	Single	56(30.3)	81(41.8)	137(36.0)
	Married	129(69.7)	113(58.2)	242(64.0)
Number of participants with children		35(18.9)	62(31.9)	97(25.9)
Number of children (Average)		1.5	1.7	1.6
Age of youngest child (Average)		6.2	10.0	8.5
Experience in the construction industry (Year)	Average	5.9	9.5	7.7
	Minimum	0.3	0.4	0.3
	Maximum	33.0	44.0	44.0
	Std. Deviation	5.8	9.2	7.9
Experience in a construction site (Year)	Average	3.9	8.2	6.1
	Minimum	0.0	0.4	0.0
	Maximum	30.0	41.0	41.0
Work location in the construction site	Std. Deviation	4.3	8.3	6.9
	Office work mainly	90(48.6)	41(21.1)	131 (34.6)
	Fieldwork mainly	95(51.4)	153(78.9)	248 (65.4)
Weekly working hour(s)	Average	49.3	54.5	52.0
	Minimum	8.0	9.0	8.0
	maximum	90.0	112.0	112.0
	Std. Deviation	15.6	16.4	16.2
Day off per month	Average	3.7	3.7	3.7
	Minimum	0.0	0.0	0.0
	Maximum	15.0	24.0	24.0
	Std. Deviation	2.4	3.0	3.2

The study employs the Cronbach's alpha coefficient to determine the capability of the factors and the associated Likert scale to effectively evaluate the job satisfaction and work-life balance of the technical personnel. The findings reveal that the Cronbach's alpha coefficients for both job satisfaction and work-life balance dimensions are 0.887 and 0.843, respectively. These results reveal that the instrument exhibits high reliability and internal consistency. The Cronbach alpha coefficient satisfies the threshold value of 0.7, as suggested in the literature [44]. George and Mallery (2003) state that a Cronbach's alpha coefficient greater than 0.8 is indicative of good internal consistency [45]. To ensure all criteria contribute to internal consistency, Cronbach's alpha coefficient values for each item should also be checked when an item is removed. If an item's Cronbach's alpha value exceeds the overall Cronbach's alpha coefficient, removal of that criterion (i.e., workload) would increase the overall Cronbach's alpha coefficient value [46]. Table 4 illustrates that no factors require exclusion since all Cronbach's alpha values for remaining items are lower than the overall Cronbach's alpha coefficient.

Table 4. Cronbach's Alpha Value If Item Deleted for Factors

Factor	Cronbach's Alpha
Satisfaction degree on the factors of job satisfaction	<b>0.887</b>
Workload	0.876
Payment	0.879
Job security	0.871
Respect and support from the management	0.871
Chances for personal development	0.876
Relationships with coworkers	0.884
Sense of success	0.883
Responsibilities	0.872
Working pressure	0.875
Promotions	0.874
Satisfaction degree on the factors of work-life balance	<b>0.843</b>
Number of days off (holidays)	0.798
Extracurricular activities, time spent with family	0.759
Working hours (daily)	0.804
Time spent in different cities or countries	0.841
Childcare support	0.838

#### 4.2. Mann-Whitney U Analysis

In the first step of the study, the technical personnel's perceptions of job satisfaction and work-life balance were explored using binary groups of gender, age,

marital status, having/not having children, experience, work location, weekly working hours, and the number of leave days per month. To facilitate an equitable distribution of responses across the groups, the median was adopted to divide participants into two groups. This resulted in a statistically sound sample size in each binary group. The null hypothesis posits that no discrepancies exist between the average scores of the two cohorts recorded by professional assessors (e.g., those who hold over 5 years of work experience, as opposed to those with less than 5 years of experience).

Age-based measures commonly feature in research on contentment [47- 50]. As disclosed in Table 5, respondents aged over 29 years expressed contentment regarding their workloads. Groups under the age of 29 reported being content with childcare assistance for work-life equilibrium, but expressed dissatisfaction regarding the number of leave days, extracurricular activities, and time spent with their family. This outcome aligns with the fact that young civil engineers usually demonstrate a higher level of sociability.

Table 5 displays those male respondents recorded more prospects for individual advancement compared to women. The response of female participants may be influenced by the male-dominated construction site structure, challenging physical conditions, the lack of role models in the construction sector, and socio-cultural factors.

Notably, unmarried individuals without children perceive more opportunities for personal growth. Groups over 29 years of age who are married with children reported satisfaction with their workload. On the other hand, individuals who are single or without children expressed dissatisfaction with the number of days off, extracurricular activities and time spent with family.

The findings indicate that those with less than five years of experience and those with more than five years of experience in the construction industry had dissimilar perceptions of "promotion". Respondents with 10 or more years of work experience place greater importance on promotion, which is also expected since those with more than five years of experience are likely to be in positions where they supervise subordinates [51- 53].

The study also found general dissatisfaction with work-life balance factors. Specifically, individuals who are less experienced and work for more than 54 hours per week report finding the amount of holiday time, opportunities for extracurricular activities, and family time to be inadequate.

Table 5. Arithmetic Mean Scores for Factors by Personal Characteristics

SATISFACTION DEGREE OF THE JOB	SATISFACTION FACTORS	GENDER		AGE		MARITAL STATUS		CHILD		EXPERIENCE		WORK LOCATION		WEEKLY WORKING HOUR(S)		DAY OFF PER MONTH	
		Woman	Man	<29	>=29	Married	Single	Exist	Absent	<5	>=5	Office	Site	<54	>=54	<4	>=4
SATISFACTION DEGREE OF THE JOB	Workload	3,75	3,32	2,67	2,44	2,48	3,30	3,15	3,72	3,89	4,00	3,23	3,55	3,47	2,90	3,19	
	Payment	2,84	3,13	2,83	2,54	2,61	3,32	3,13	3,86	3,94	4,16	3,32	3,66	3,44	3,01	3,15	
	Job security	3,75	3,26	2,61	2,44	2,45	3,30	3,10	3,73	3,87	4,03	3,27	3,44	3,41	2,82	3,09	
	Respect and support by the management	2,84	3,12	2,95	2,58	2,69	3,34	3,17	3,90	3,98	4,19	3,32	3,81	3,50	3,13	3,23	
	Chances for personal development	2,91	3,27	2,98	2,71	2,79	3,36	3,28	3,94	3,95	4,16	3,33	3,82	3,55	3,22	3,30	
	Relationships with coworkers	2,56	3,13	2,68	2,40	2,45	3,29	3,06	3,75	3,91	4,09	3,27	3,51	3,39	2,85	3,09	
	Sense of success	2,88	3,19	3,02	2,81	2,91	3,46	3,33	4,01	4,03	4,17	3,34	3,88	3,60	3,32	3,40	
	Responsibilities	-	3,18	2,71	2,41	2,46	3,27	3,07	3,75	3,89	4,10	3,28	3,54	3,40	2,86	3,08	
	Working pressure	3,29	3,14	2,58	2,38	2,40	3,23	3,06	3,73	3,85	4,01	3,27	3,47	3,40	2,80	3,09	
	Promotions	2,85	3,23	2,96	2,63	2,72	3,40	3,21	3,90	3,99	4,19	3,31	3,77	3,50	3,13	3,24	
	Number of days off (holidays)	2,95	3,46	2,87	2,70	2,84	3,36	3,27	3,85	3,87	4,16	3,36	3,69	3,63	3,14	3,33	
SATISFACTION DEGREE OF THE WORK-LIFE	Extracurricular activities, time spent with family	2,84	3,03	2,74	2,41	2,44	3,30	3,07	3,81	3,96	4,09	3,26	3,59	3,35	2,90	3,08	
	Working hours (daily)	3,04	3,21	3,25	2,90	3,04	3,41	3,40	3,96	4,02	4,21	3,43	3,80	3,53	3,17	3,32	
	Time spent in different cities or countries	2,66	3,15	2,39	2,19	2,18	3,24	2,92	3,70	3,85	4,03	3,18	3,48	3,38	2,83	3,03	
	Childcare support	2,79	3,03	2,67	2,23	2,30	3,35	3,12	3,84	3,90	4,05	3,31	3,62	3,38	3,03	3,23	
		2,93	3,28	2,86	2,71	2,77	3,30	3,15	3,81	3,96	4,17	3,28	3,63	3,50	2,95	3,12	

### 4.3. Cluster Analysis

The purpose of the cluster analysis is to establish whether the components are creating significant groupings in relation to the socio-demographic questions posed in the questionnaire survey. The study examines separately the distribution of job satisfaction and work-life balance factors, based on construction site work locations.

When examining the clustering of job satisfaction factors concerning work location at a construction site, three clusters were formed using the TwoStep Algorithm with ten (Workload, payment, job security, respect and support from the management, chances for personal development, relationships with coworkers, sense of success, responsibilities, working pressure, promotions) inputs. The cluster quality, as measured by the Average Silhouette value of 0.3, was acceptable. The smallest

cluster size was 94 (25.8%) and the largest was 172 (47.3%), resulting in a ratio of 1.83 between the sizes of the largest and smallest clusters.

Additionally, clusters were formed for work-life balance factors and gender. The TwoStep Algorithm produced three clusters from five inputs, and the resulting cluster quality score (Average Silhouette: 0.3) was deemed acceptable. The smallest cluster was comprised of 28 members (29.8%) and the largest, 34 members (36.2%). The largest cluster was 1.21 times larger than the smallest. The clustering method optimally grouped the factor variables, as confirmed by the homogeneous distribution observed in both clusters (see Figure 1). The obtained clusters produced meaningful results, successfully grouping technical employees by their job satisfaction and work-life balance in line with expectations.

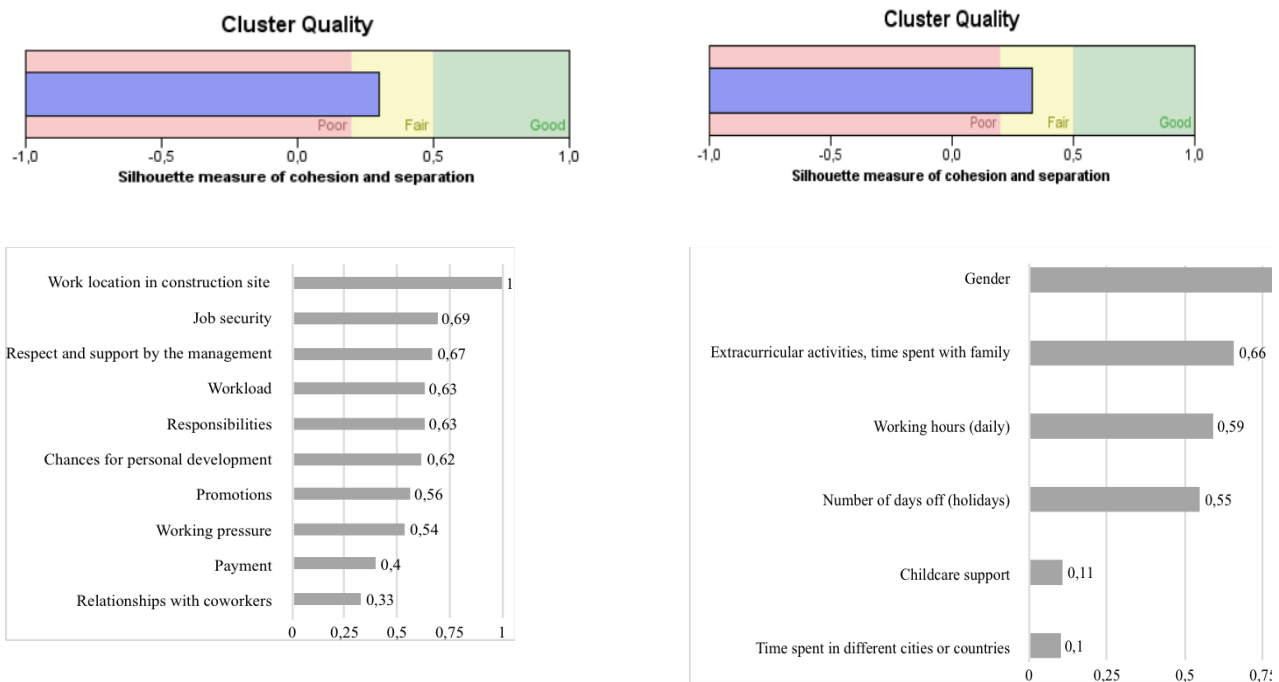


Figure 1. Predictor Importance of Cluster Analysis

## 5. Discussion

The research on job-life balance at construction sites found that work-life balance (WLB) and work culture have a positive impact on employee loyalty and job satisfaction within construction companies. This relationship is partially mediated by job satisfaction. The study also revealed that WLB has a negative association with job stress, while having a positive relationship with job satisfaction and commitment in transportation companies. The relationship between work-life balance (WLB) and its outcomes is moderated by the work environment and training and development.

Work-life conflict adversely affects employee productivity, health, mental well-being, project performance, and turnover rate in the construction sector. Therefore, implementing stress management and WLB strategies is crucial for enhancing employee well-being and organizational performance.

Mann-Whitney test, it uses various binary groups, such as female-male and married-single, to distribute the responses evenly into two groups based on the median value of age, experience, and project value, were employed in the paper. The Mann-Whitney U test uncovered significant differences between the groups according to the gender and location of work at site (site technical office or at the construction site where activities are being performed).

The paper details the Cluster Analysis methodology used to explore the relationship between work location and gender factors among employees. The cluster analysis outcomes are evaluated and presented for quality and validity, showing the formation of three clusters for each variable set. The results suggest that the optimum

clusters were generated via factor variables, with the subsequent groupings demonstrating success and meaning in relation to technical employees' job satisfaction and work-life balance. An acceptable cluster quality is shown with an average silhouette of 0.3. The Average Silhouette depicts the appropriateness of each data point to its assigned cluster, marked from -1 to 1, with higher scores signifying increased conformity. Additionally, the text exhibits the sizes of the tiniest and largest clusters and their proportional ratio to demonstrate the balance or divergence of clusters. Lesser ratios indicate a more balanced distribution. Moreover, the results suggest that optimal clusters were determined by the cluster analysis, considering factor variables. The successful clusters yielded significant outcomes regarding the expected groupings of technical personnel's job contentment and work-life balance.

In light of the study's findings, it may be necessary to explore ways to improve job satisfaction and work-life balance for technical employees. Improving the job satisfaction and work-life balance of technical employees is essential for fostering a healthy and productive work environment. To achieve this, organizations should offer flexible work arrangements, such as adjustable working hours and remote work options, enabling employees to better balance their professional and personal lives. Clear communication of job expectations and performance goals helps reduce ambiguity and stress. Managing workloads is crucial to avoid overwhelming employees, and open dialogue about work-related pressures is encouraged. Promoting the importance of maintaining work-life boundaries, including disconnecting from work outside of office hours, is essential for mental well-being.

Organizations should also support employees' mental health, offer wellness programs, and ensure a healthy workplace culture. Additionally, recognition and rewards for outstanding performance, team-building activities, and fostering an inclusive workplace culture contribute to job satisfaction and work-life balance. Furthermore, offering time off, involving employees in decision-making, and investing in training and skill development all contribute to a positive work environment. Leadership should be supportive, and feedback mechanisms should be in place to gauge employee satisfaction and gather suggestions for improvement. Cultivating a work culture that prioritizes work-life balance from the top down is key to achieving these goals, ultimately leading to a more engaged and motivated workforce.

## 6. Conclusion

In the context of construction sites, it is crucial to emphasize the paramount importance of job satisfaction and work-life balance, as they profoundly influence not only the safety, productivity, and retention of the workforce but also the quality of work, team dynamics, the health and well-being of employees, the company's reputation, innovation and creativity, compliance with labor regulations, and ultimately, customer satisfaction, making them integral factors in the overall success and sustainability of construction projects and the industry at large.

The study once again reveals the difficult working conditions in the construction sector. Long working hours, indefinite working hours, lack of weekend vacations and the disruption of work-life balance are clear results. Participants are dissatisfied with the time available for non-work activities, family and friends. In addition to the work-life balance problem, workplace stress levels and physical conditions at the construction site were identified as issues that need to be examined in detail and solutions sought. It is known that in terms of physical conditions, noise level in the work environment, hygiene conditions, lack of personal care and social areas are the most prominent problems. According to findings participants are dissatisfied with the impact of work on their health, sleep patterns/quality and low energy levels. Long working hours, problems in work-life balance, workload and communication problems with managers were found to be the most effective factors in the participants' workplace stress. Another result is the complaints about gender inequality in the field study, in which the participants were almost half male and half female. It is seen that women technical staff are subjected to gender discrimination in different ways.

It is important to eliminate stress factors in the workplace in order to ensure a humane working life, to increase productivity and to prevent coronary heart diseases, mental or psychosomatic diseases that may occur in the future. This study aims to provide valuable insights into key factors contributing to workplace stress among technical staff in the Turkish construction

industry. It examines gender discrimination on construction sites, explores measures to address it, and lays a foundation for future studies to investigate the causal relationship between workplace stress and the health of technical staff.

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