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Cluster Analysis of Iranian Provinces Based on Islamic Work Ethics, Organizational Commitment, and Job Satisfaction among Aid Workers of the Red Crescent Society

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Original Article

Abstract

INTRODUCTION: Islamic work ethics constitute a fundamental component of organizational culture within relief organizations. Higher levels of work ethics appear to promote both organizational commitment and job satisfaction among aid workers. Examining inter-provincial variations in these indicators may provide strategic insights for human resource policymaking and performance enhancement within the Iranian Red Crescent Society (IRCS).

METHODS: A cross-sectional study was conducted among aid workers of the IRCS across all provinces of Iran in 2024. Islamic work ethics, organizational commitment, and job satisfaction were assessed using validated and widely applied standardized questionnaires including: Golparvar and Nadi Islamic work ethics (2011), Allen and Meyer organizational commitment (1993), and Brayfield and Rothe job satisfaction (1951). K-means clustering was employed to identify distinct provincial groupings based on aggregated mean scores for each indicator at the provincial level. The optimal number was determined through iterative model testing and evaluation of clustering stability.

FINDINGS: The findings indicated that among the 3,399 respondents, 2,221 (65.3%) were male and 1,178 (34.7%) were female, with a mean age of 36.9 years. The mean scores for Islamic work ethics, organizational commitment, and job satisfaction were 4.23 ± 0.42, 3.54 ± 0.40, and 3.82 ± 0.40, respectively. Based on the inflection point of the elbow plot and the K-means clustering results such as Purity index equals to 0.73, a three-cluster solution was identified as the most appropriate classification. Cluster 1 comprised 12 provinces with moderate levels across all three indicators. Cluster 2 included 9 provinces and demonstrated the highest overall scores, whereas Cluster 3 consisted of 8 provinces and exhibited the lowest levels across all indicators.

CONCLUSION: According to the results, the three clusters were labeled as Moderate (Cluster 1), High (Cluster 2), and Developing (Cluster 3) to reflect their relative performance across the three indicators. The hypothesis is that provinces located in the high cluster have more effective management and more supportive work environments. In contrast, provinces located in the developing cluster need targeted interventions to strengthen employee engagement and improve organizational outcomes.

Keywords: Clustering; Aid worker; Islamic work ethics; Organizational commitment; Job satisfaction.

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Introduction

In the fields of behavioral sciences and human resource management, work ethics has been recognized as a key determinant of employees' attitudes and behaviors, with the potential to influence a wide range of individual and organizational outcomes. Numerous studies have demonstrated that Islamic work ethics is positively associated with organizational commitment and job satisfaction. Stronger adherence to work ethics enhances both employees' commitment and satisfaction (1,2).

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Organizational commitment, defined as an individual's psychological attachment to the organization, plays a pivotal role in employee retention and organizational performance. It is also directly linked to job satisfaction, with more committed employees reporting higher satisfaction with organizational services and a greater propensity to remain (1). Job satisfaction, reflecting employees' cognitive and emotional responses to their work and work environment, has emerged as a critical indicator in organizational behavior research due to its association with job performance, psychological well-being, and employee loyalty (3).

While the relationships among these three constructs have been extensively examined at the individual level (1–3), their spatial and regional dimensions remain relatively underexplored. This is particularly important in emergency response organizations, where inter-provincial variations in employee attitudes and behaviors may have substantial managerial implications. Although cluster analysis has been applied in areas such as disaster response, health crises, and health service indicators (4–6), its application in assessing regional patterns of work ethics, organizational commitment, and job satisfaction remains limited.

Therefore, this research aims to provide insights into human resource management in RCS by conducting a cluster analysis. Cluster analysis is a robust method for investigating such spatial differences, as it enables the grouping of spatial units based on multivariate similarity and has been widely used in social geography and regional policy research (7).

Previous studies in the social sciences have shown that clustering techniques can reveal heterogeneous patterns in regional data and identify homogeneous zones across multiple variables, which is particularly valuable for resource allocation and evidence-based policy planning (8).

Given the strategic importance of human resources in emergency organizations and their critical role in crisis response, examining provincial patterns of Islamic work ethics, organizational commitment, and job satisfaction, and clustering them accordingly, cannot enhance understanding of workforce dynamics but also provide a strategic basis for improving managerial effectiveness and organizational performance within emergency response organizations.

Methods

The present study was conducted using a cross-sectional design in 2024. Three standardized questionnaires, including Golparvar and Nadi's Islamic work ethics (9), Allen and Meyer's organizational commitment (10), and Brayfield and Rothe's job satisfaction (11), were used as data collection tools in addition to demographic characteristics. In the present study, their reliability was re-assessed using a pilot sample of 25 participants, yielding Cronbach's alpha values of 0.88, 0.89, and 0.87, respectively.

The questionnaire link was designed and distributed online to aid workers. The link was sent to the Rescue and Relief Organization through administrative correspondence. To increase the response rate, a research associate at the Rescue and Relief Organization contacted provincial experts and reminded them to ensure sufficient participation.

The sample size was estimated based on the formula for the population mean of organizational commitment, with a type I error (α) of 0.05, a standard deviation of 1.0, and a statistical power of 0.80, yielding an estimated sample size of 3,009. An additional 10% was added to account for potential dropout due to reasons such as unwillingness to continue participation or incomplete questionnaires, resulting in a final sample size of 3,399 aid workers.

Inclusion criteria included willingness to participate in the study and engagement in relief and rescue operations for at least the past six months. Participants were selected using a simple random sampling method from rescue workers who had actively participated in rescue and relief operations during the previous six months (prior to completing the questionnaire).

Statistical Analysis

Categorical variables were summarized using frequencies and percentages (n%). Continuous variables were described using mean and standard deviation (Mean ± SD). K-means cluster analysis was performed, and an elbow plot was first generated to determine the optimal number of clusters. Prior to the cluster analysis, the three variables—Islamic work ethics, organizational commitment, and job satisfaction—were standardized. A significance level of 0.05 was applied for all statistical tests.

Findings

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Of the total number of 3,399 respondents, 2,221 individuals (65.3%) were male and 1,178 (34.7%) were female, with a mean age of 36.9 years. The mean scores for Islamic work ethics, organizational commitment, and job satisfaction were 4.23 ± 0.42, 3.54 ± 0.40, and 3.82 ± 0.40, respectively.

All 31 provinces, except North Khorasan and Kurdistan, achieved the optimized sample sizes determined for each province. For the application of K-means cluster analysis, an elbow plot was first constructed to identify the optimal number of clusters (Figure 1). Considering the stabilization of the slope of the line for the number of clusters versus the within-cluster sum of squares (WSS), three clusters were selected. Subsequently, K-means cluster analysis was performed based on these three clusters.

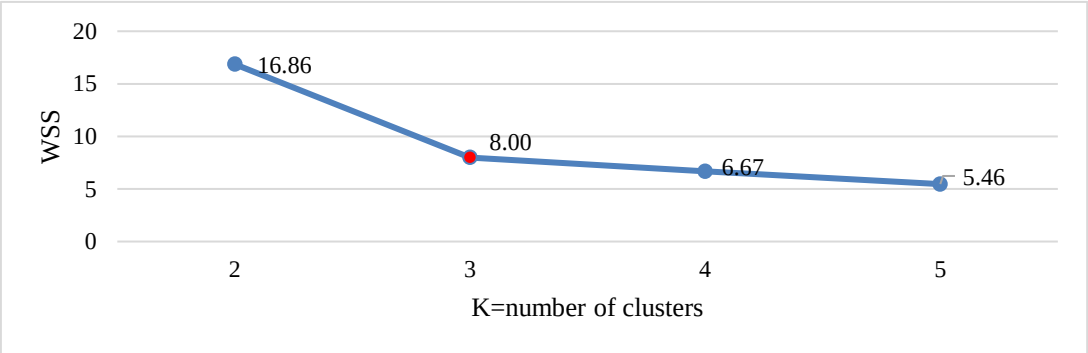

Figure1. Elbow plot for determining the optimal number of clusters

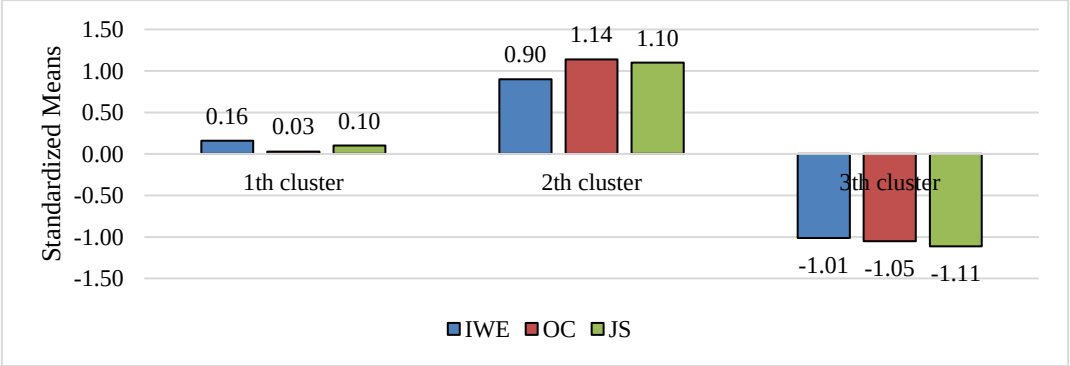

Figure 2. Mean standardized scores of the three variables (IWE, OC, and JS) across the three clusters

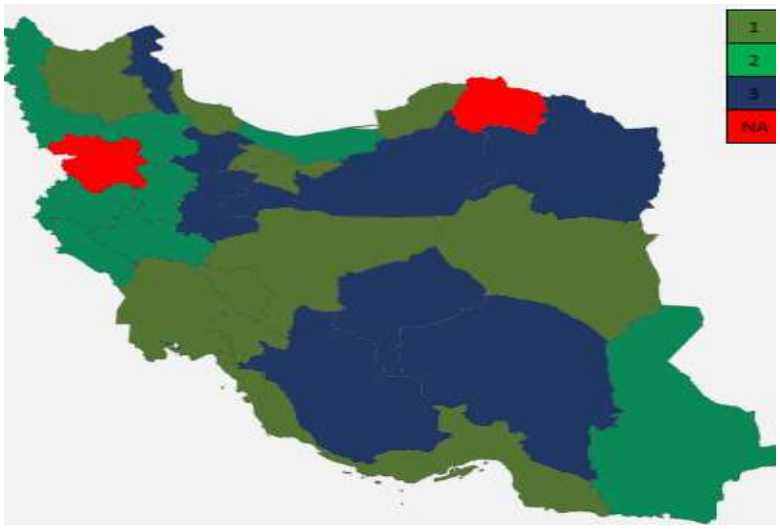

Figure 3. Map of Iran provinces the three-cluster classification

Note: NA indicates two provinces, North Khorasan and Kurdistan, which did not achieve the optimized sample size.

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Based on K-means cluster analysis, three clusters were identified, including 12 provinces (Alborz, Bushehr, Chaharmahal and Bakhtiari, East Azerbaijan, Gilan, Golestan, Hormozgan, Isfahan, Khuzestan, Kohgiluyeh & Boyer-Ahmad, South Khorasan, and Tehran), 8 provinces (Hamedan, Ilam, Kermanshah, Lorestan, Mazandaran, Sistan & Baluchistan, West Azerbaijan, and Zanjan), and 9 provinces (Ardabil, Fars, Kerman, Markazi, Qazvin, Qom, Razavi Khorasan, Semnan, and Yazd).

As shown in Figure 2, the mean standardized scores of the three variables (IWE, OC, and JS) across the three clusters indicate a distinct difference among the clusters. The mean standardized scores of IWE, OC, and JS for provinces in clusters 1 and 2 are higher than the overall mean (i.e., greater than zero). In contrast, these means are lower than the overall mean for provinces in the third cluster (i.e., less than zero).

Accordingly, provinces in clusters 2, 1, and 3 can be interpreted as having high, moderate, and developing levels, respectively, in terms of IWE, OC, and JS. The spatial distribution of Iran's provinces across the three clusters is presented in Figure 3.

Discussion and Conclusion

The findings of this study indicate that the provinces of the country can be classified into three distinct clusters based on three key variables: Islamic work ethic, organizational commitment, and job satisfaction. This clustering reflects the existence of significant regional differences in the occupational attitudes and values of relief workers and confirms that attitudinal human resource variables at the macro level can shape homogeneous geographical and organizational patterns. Such an approach has been increasingly emphasized in recent human resource management research—particularly within service-oriented and relief organizations—as an effective tool for data-driven decision-making.

The results further revealed that Cluster 2 exhibited the highest standardized mean scores across all three variables. This alignment between Islamic work ethic, organizational commitment, and job satisfaction is consistent with recent empirical evidence suggesting that value-based professional ethics can enhance job-related attitudes through increased perceived meaningfulness of work, intrinsic motivation, and organizational trust (12,13). Recent studies also indicate that in mission-driven organizations, such as relief agencies, ethical values play an even more prominent role in strengthening organizational commitment than material incentives (14).

Cluster 1, positioned at a moderate level, represents provinces with relatively favorable job-related attitudes; however, they still lag behind the cluster in which all three variables are at desirable levels. Contemporary research suggests that such an "intermediate" condition often stems from a misalignment between employees' personal values and managerial practices or organizational policies (15). Under these circumstances, targeted interventions in areas such as organizational justice, perceived organizational support, and the development of psychological capital may lead to simultaneous improvements in job satisfaction and organizational commitment (16).

In contrast, Cluster 3, characterized by standardized mean values below zero across all three variables, includes provinces that can be considered "developing" in terms of attitudinal human capital. Evidence from post-2020 studies demonstrates that low levels of job satisfaction and organizational commitment, particularly in high-stress occupations such as relief and rescue services, are associated with adverse outcomes, including burnout, reduced performance, and diminished service quality (17,18). This issue becomes even more critical under conditions of recurrent crises, as the sustained effectiveness of relief organizations is highly dependent on the psychological and attitudinal well-being of their workforce.

From a practical perspective, the results underscore the necessity of region-specific policy-making in human resource management. The findings suggest that adopting uniform national-level strategies, without considering provincial cluster differences, may fail to achieve optimal effectiveness. Recent studies recommend that data-driven clustering can serve as a basis for the intelligent allocation of educational, cultural, and motivational resources, ultimately contributing to the sustainable enhancement of work ethic, organizational commitment, and job satisfaction (19,20).

Overall, by employing cluster analysis and focusing on key attitudinal indicators, this study provides robust empirical evidence in support of evidence-based management and data-driven

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human resource governance within relief organizations. These findings may serve as a scientific foundation for future planning and policy formulation at both provincial and national levels.

Compliance with Ethical Guidelines

All ethical principles have been considered in this article, and participants were informed of the purpose of the research and its implementation steps.

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This research has not received any funding.

Author's Contributions

This article is based on the idea of Batoul Khoundabi, who was responsible for conducting the research, analyzing the data, and designing the research methodology. The other authors—Babak Mahmoudi, Mojtaba Emamian, Mehdi Khalafi, and Siyavash Gholami—were responsible for data collection and implementation. Batoul Khoundabi also handled correspondence and edited the final manuscript submitted to the journal.

Conflict of Interests

The authors declare no conflict of interest.

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