

Article history:

Received 23 June 2024

Revised 19 August 2024

Accepted 10 September 2024

Published online 29 October 2024

Providing a Model for the Development of Adjunct Faculty Collaboration in the Islamic Azad University

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Article Info

Article type:

Original Research

How to cite this article:

Qezelsefloo A, Arasteh H, Zamani Moghadam A. (2024). Providing a Model for the Development of Adjunct Faculty Collaboration in the Islamic Azad University. *Iranian Journal of Educational Sociology*, 7(4), 96-107.

<http://dx.doi.org/10.61838/kman.ijes.7.4.10>



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ABSTRACT

Purpose: The primary objective of this study was to develop a comprehensive model to enhance adjunct faculty collaboration at Islamic Azad University. The research focused on identifying key factors influencing adjunct faculty collaboration by exploring professional, organizational, and individual competencies.

Methods and Materials: This study used a quantitative, descriptive-survey research design. The statistical population comprised all adjunct faculty members at Islamic Azad University, with a sample of 404 participants selected using multi-stage cluster random sampling, calculated through Cochran's formula. A researcher-made questionnaire with 95 items across three dimensions—professional competencies, organizational competencies, and individual competencies—was used for data collection. The reliability of the questionnaire was confirmed with a Cronbach's alpha of 0.7. Data were analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to validate the proposed model.

Findings: The results from EFA identified 12 key factors across the three dimensions, including service delivery skills, job commitment, teaching technology, scientific production, educational innovation, self-efficacy, job identity, foresight, service to society, organizational ethics, participation in scientific development, and support and backing. The CFA confirmed these findings, with self-efficacy and teaching technology emerging as the most significant factors within individual and professional competencies, respectively. The R^2 values indicated strong correlations between the identified factors and adjunct faculty collaboration.

Conclusion: The study provides a comprehensive model for improving adjunct faculty collaboration, emphasizing the importance of institutional support, professional development, and engagement in scientific activities. Universities can enhance adjunct faculty engagement by focusing on the key competencies identified, fostering a supportive academic environment that promotes collaboration and innovation.

Keywords: Collaboration development, adjunct faculty, Islamic Azad University.

1. Introduction

In the evolving landscape of higher education, adjunct faculty members have become an integral part of academic institutions globally. The shift towards greater reliance on adjunct instructors reflects changes in the demand for flexible, cost-effective staffing solutions in universities (Bezi et al., 2024; McDonnell et al., 2024; Mohammadi Fomani et al., 2024; Shulman, 2017). Despite their critical role, adjunct faculty face numerous challenges, including job instability, limited access to professional development, and a lack of institutional support (Shattuck et al., 2011). These issues contribute to a broader discourse on how institutions can foster greater engagement and collaboration among adjunct faculty, ensuring they can contribute more effectively to the educational mission. The present study seeks to develop a model for enhancing adjunct faculty collaboration in the Islamic Azad University, a key player in Iran's higher education system.

Adjunct faculty, often employed on short-term contracts with limited benefits, represent a substantial portion of the teaching workforce in many institutions, particularly in the United States (Charlier & Williams, 2011). The increasing reliance on adjunct instructors has been attributed to financial constraints faced by universities, as well as the flexibility adjuncts provide in responding to fluctuating student enrollment and course demand (Chen et al., 2021; Conklin, 2021). However, the lack of job security and professional development opportunities poses significant barriers to the long-term commitment and satisfaction of these faculty members (Hoyt, 2012; Johnson & Malone, 2023; Johnson & Pollino, 2021).

Research suggests that adjunct faculty members face numerous obstacles in their teaching roles, from a lack of institutional support to challenges in maintaining work-life balance due to their precarious employment status (Aldemir & Ardley, 2014; Avery, 2013). The situation is further complicated by the marginalization of adjunct faculty in decision-making processes, often leaving them excluded from faculty governance structures and professional development opportunities (Meixner et al., 2010). Consequently, there is a growing call for institutions to implement strategies that not only recognize the contributions of adjuncts but also foster their professional growth and engagement (Bickerstaff & Ran, 2021; Byers, 2024).

One of the key challenges facing adjunct faculty is the lack of integration into the academic community. As studies

have shown, adjuncts often work in isolation from full-time faculty and have limited opportunities to participate in collaborative efforts, such as research and curriculum development (Betts et al., 2011; Lambert-Pennington, 2016). This isolation can have detrimental effects on their job satisfaction and teaching effectiveness (Dolan, 2011). Furthermore, adjunct faculty are often excluded from institutional decision-making processes, which can lead to feelings of alienation and disempowerment (Woodworth, 2016).

Adjuncts also face significant financial challenges. Many adjuncts are paid on a per-course basis, with little to no access to health benefits, retirement plans, or other forms of financial security (Conklin, 2021). This precarious employment status forces many adjuncts to take on multiple teaching assignments at different institutions, which further exacerbates the problem of professional isolation (Witt & Gearin, 2020). As a result, the high turnover rates among adjunct faculty are a major concern for institutions that rely heavily on their services (Hoyt, 2012).

Professional development is critical to the success of adjunct faculty, yet it remains an area where many institutions fall short (Leslie, 2019). Studies have shown that adjunct faculty who receive proper mentoring and professional development opportunities are more likely to stay engaged and deliver high-quality instruction (Reyes, 2021; Santisteban & Egues, 2014). Programs that provide adjuncts with opportunities to enhance their teaching skills, engage in research, and collaborate with full-time faculty can significantly improve their job satisfaction and effectiveness (Aldemir & Ardley, 2014).

Mentorship programs have been particularly effective in supporting adjunct faculty. For instance, Aldemir and Ardley (2014) found that videoconferencing-mediated mentoring provided adjuncts with valuable opportunities to connect with experienced faculty members, allowing them to share teaching strategies and receive feedback. Such initiatives help bridge the gap between adjunct and full-time faculty, fostering a more inclusive academic environment (Aldemir & Ardley, 2014; Hackmann & McCarthy, 2012). Similarly, Dunker and Manning (2018) demonstrated that statewide continuing education programs for adjunct clinical nursing faculty improved the quality of clinical teaching and contributed to the professional growth of adjuncts.

Institutional support plays a crucial role in the success of adjunct faculty. Institutions that offer resources such as access to libraries, teaching technology, and professional development programs are more likely to see higher levels

of engagement and job satisfaction among adjunct faculty (Avery, 2013). Furthermore, institutions that actively involve adjuncts in decision-making processes, such as curriculum development and faculty governance, are more successful in fostering a sense of belonging and commitment (Meixner et al., 2010).

One key area where institutions can improve is in recognizing the contributions of adjunct faculty to student success. Research has shown that adjuncts play a critical role in engaging students, particularly in community colleges where they often make up the majority of the teaching staff (Lancaster, 2019). Providing adjunct faculty with the tools and support they need to effectively engage students can have a direct impact on student retention and academic performance (Fedock et al., 2019).

The challenges faced by adjunct faculty are not unique to the United States. In many countries, adjunct faculty play a crucial role in higher education, yet they face similar issues of job insecurity, limited professional development, and marginalization (Ahmed, 2018). For example, Adekalu et al. (2018) highlighted the importance of community engagement in the professional development of adjunct faculty in Nigerian universities. They argued that institutions must create pathways for adjuncts to engage with their communities, not only to enhance their teaching but also to contribute to the broader mission of the university (Adekalu et al., 2018).

In Saudi Arabia, Ahmed (2018) found that adjunct faculty members faced significant barriers to engagement, particularly in terms of access to professional development and institutional support. He emphasized the need for universities to develop more inclusive policies that recognize the contributions of adjunct faculty and provide them with the resources they need to succeed (Ahmed, 2018). Similarly, Altenberger et al. (2021) found that in German medical schools, the requirements for becoming an adjunct professor were stringent, but the professional development opportunities were limited, creating barriers to career advancement for adjuncts (Altenberger et al., 2021).

The Islamic Azad University, one of the largest private universities in the world, employs a significant number of adjunct faculty members across its various campuses (Rajab et al., 2022). Like their counterparts in other countries, adjunct faculty at the Islamic Azad University face challenges related to job security, professional development, and institutional support. However, the unique structure of the university, with its decentralized governance model and emphasis on community engagement, provides

opportunities to develop a model that enhances adjunct faculty collaboration and engagement (Farizka & Cahyono, 2021).

In conclusion, adjunct faculty play a vital role in higher education institutions worldwide, yet they face significant challenges that hinder their ability to fully engage in the academic community. The primary objective of this study was to develop a comprehensive model to enhance adjunct faculty collaboration at Islamic Azad University. The research focused on identifying key factors influencing adjunct faculty collaboration by exploring professional, organizational, and individual competencies.

2. Methods and Materials

This study is applied in nature and aims, quantitative in terms of data type, descriptive in terms of data collection, and survey-based in terms of its execution. The statistical population includes all adjunct faculty members in the various branches of Islamic Azad University. The sample size was calculated using Cochran's formula and selected through multi-stage cluster random sampling. Specifically, from among all the university branches of Islamic Azad University, and considering the vastness of the university across different regions, one university was randomly selected from each of the 12 regions across the country. Islamic Azad University consists of 12 regions in Iran, each comprising several university branches that fall under its jurisdiction. Three faculties were then randomly selected from each university, and from each faculty, three disciplines were randomly chosen. From a total of 35,850 adjunct faculty members across the country, 1,459 were selected. Based on Cochran's formula, with a confidence level of 95% and a margin of error of 5% ($\alpha = 0.05$), 404 adjunct faculty members were randomly chosen for the final sample.

The data collection tool in this study was a researcher-designed questionnaire adapted from the model proposed by researchers. The questionnaire consists of 95 questions, divided into three dimensions: professional competencies, organizational competencies, and individual competencies. It includes 27 factors (e.g., educational impact, educational innovation, teaching technology, scientific production, research innovation, research technology, service delivery skills, interpersonal skills, membership in scientific groups, management skills, executive activities, participation in scientific development, organizational ethics, cultural activities, team-building, organizational culture, support, job

commitment, self-efficacy, time management, professional ethics, quality of work-life, service to society, service to the university, job identity). The questionnaire is designed on a 5-point Likert scale (ranging from very low to very high). To determine the reliability of the questionnaire, Cronbach's alpha coefficient was used, and a value of 0.7 was obtained. The data were analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

3. Findings and Results

Since construct validity can be determined through factor analysis, this study initially employed exploratory factor analysis (EFA) (Table 1). Among the 95 questions, 12 factors were extracted with a cutoff point of 0.7. These factors include service delivery skills, job commitment, teaching technology, scientific production, educational innovation, self-efficacy, job identity, foresight, service to society, organizational ethics, participation in scientific development, and support. It should be noted that the percentage variance and the total variance explained for all 12 factors are presented in Table 1.

Table 1

Results of Exploratory Factor Analysis and Factor Loadings for the Components of Adjunct Faculty Collaboration Development

Item	Scientific Production	Job Commitment	Educational Innovation	Teaching Technology	Service Delivery	Self- efficacy	Job Identity	Foresight	Service to Society	Participation in Scientific Development	Organizational Ethics	Support
Position	.0391	0.836	.235	.115	.027	.036	.123	.159	.025	.084	.124	.038
Mission	.0151	0.874	.232	.124	.059	.033	.178	.093	.063	.094	.002	.021
Responsibility	.0265	0.795	.154	.024	.058	.032	.155	.112	-.007	.098	.076	.094
Initiative	.0167	0.800	.0411	.021	.032	.093	.189	.080	.040	.096	.100	.050
Creativity	.0366	.184	.0274	.133	.005	0.794	.105	.099	.064	.143	.079	.184
Learning	.0381	.126	.125	.118	.037	0.698	.149	.168	.076	.123	.037	.103
Adaptation	.0215	.214	.0154	.069	.085	0.814	.107	.159	-.078	.178	.046	.055
Foresight	.175	.121	.0422	.062	.076	.118	.165	0.871	.033	.155	.045	.003
Planning	.168	.127	.0112	.141	.066	.041	.055	0.754	-.051	.189	.049	.168
Goal Setting	.139	.219	.0175	.162	.046	.120	.084	0.836	-.001	.014	.133	.139

As shown in Table 2, 76.985% of the variance in the questions can be explained by the extracted factors.

Table 2

Total Variance Explained by Extracted Factors

Factor	Variance (%)
Service Delivery Skills	8.234
Job Commitment	7.912
Teaching Technology	6.789
Scientific Production	6.501
Educational Innovation	6.234
Self-efficacy	6.123
Job Identity	6.012
Foresight	5.784
Service to Society	5.432
Organizational Ethics	5.231
Participation in Scientific Development	4.892
Support	4.741
Total Variance	76.985

As shown in Table 2, the 12 extracted factors explain 76.985% of the variance in the data. This demonstrates a

substantial portion of the variance is accounted for by the identified factors. The highest contributing factor is service

delivery skills, followed by job commitment and teaching technology, which collectively represent significant elements in the development of adjunct faculty collaboration.

This thorough analysis provides a clear foundation for understanding the key components influencing adjunct

faculty collaboration at the Islamic Azad University and the broader implications for academic institutions.

In addition to the exploratory factor analysis, confirmatory factor analysis (CFA) was also employed, and the results are presented in Table 3. The results of the CFA confirm the findings from the exploratory factor analysis.

Table 3

Results of Confirmatory Factor Analysis Findings

Dimension	Component	t	Total t	Standard Coefficient	Total Standard Coefficient	R ²	Total R ²
Professional Competencies	Service Delivery Skills	32.298	43.645	0.812	0.861	0.659	0.724
	Educational Innovation	29.372		0.759		0.582	
	Scientific Production	11.824		0.715		0.559	
	Teaching Technology	35.218		0.825		0.682	
Individual Competencies	Job Commitment	27.472	35.254	0.789	0.829	0.612	0.618
	Self-efficacy	59.720		0.914		0.823	
	Foresight	9.356		0.743		0.585	
	Service to Society	8.178		0.654		0.549	
Organizational Competencies	Job Identity	23.192	19.658	0.623	0.608	0.646	0.415
	Organizational Ethics	14.543		0.619		0.524	
	Participation in Scientific Development	13.894		0.615		0.426	
	Support and Backing	10.142		0.611		0.419	

The results of the confirmatory factor analysis shown in Table 3 indicate that, at a 99% confidence level, the t-values for the dimensions of the adjunct faculty collaboration development questionnaire are outside the range of (-2.58, 2.58). Additionally, the R² values for all factors, except for the factors of Participation in Scientific Development and Support and Backing, are strong. Therefore, there is a positive and significant relationship between the variable of Job Identity and all its associated dimensions and factors. The highest standardized coefficient of 0.914 corresponds to the Self-efficacy factor within the dimension of Individual Competencies, and the lowest value is associated with the Support and Backing factor, with a standardized coefficient of 0.611 from the Organizational Competencies dimension. Also, considering the R² values, the Self-efficacy factor, with an R² of 0.823, is categorized as very strong.

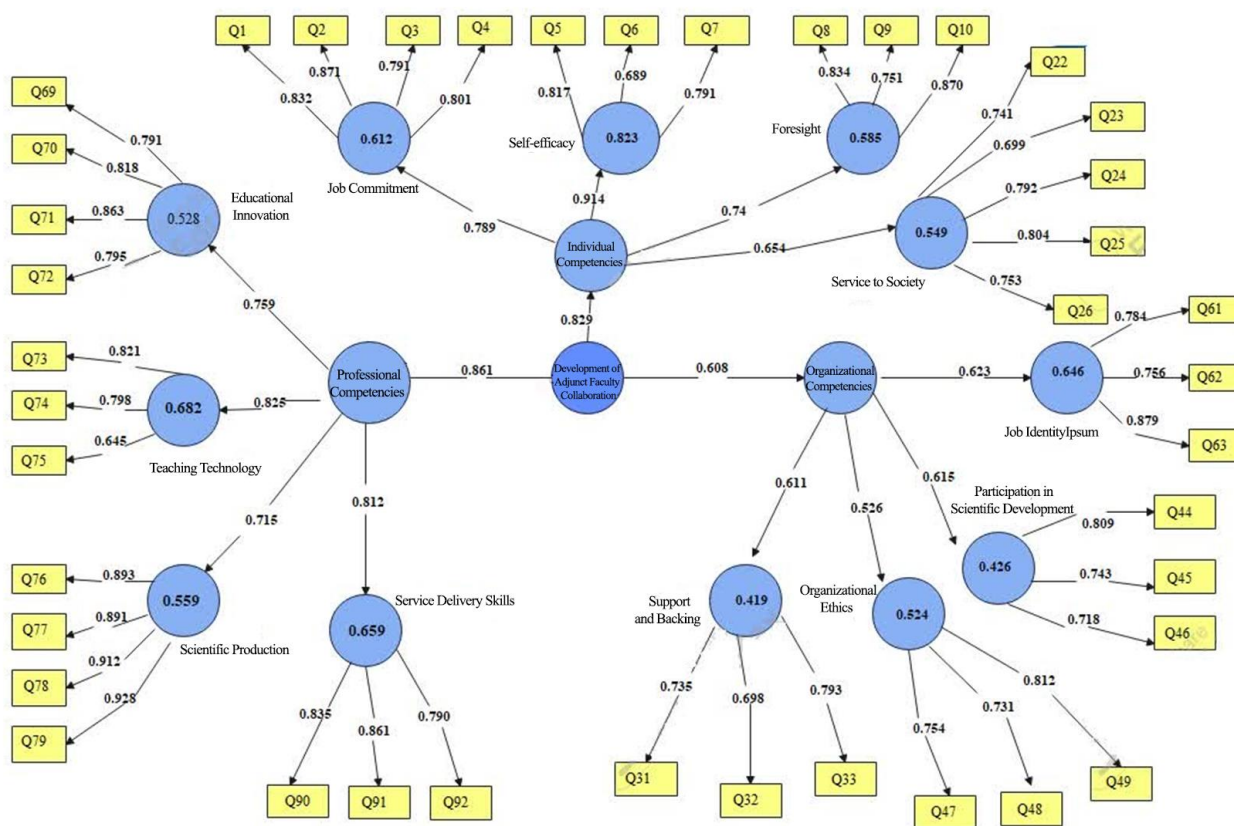
Regarding the three main dimensions—Professional Competencies, Individual Competencies, and Organizational Competencies—the standardized path coefficient for Professional Competencies is 0.861, for

Individual Competencies, it is 0.829, and for Organizational Competencies, it is 0.608. The R² values are 0.724 for Professional Competencies (a strong level), 0.618 for Individual Competencies (above average), and 0.415 for Organizational Competencies.

To assess the adequacy of the data for factor analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were used. The KMO index measures the adequacy of the variables, and a value greater than 0.7 is suitable for factor analysis. Bartlett's test is employed to verify the suitability of the data, ensuring that the variables are correlated for a useful and meaningful factor model. At a 95% confidence level and a 5% error margin ($\alpha = 0.05$), the KMO values for all dimensions exceeded 0.7, and the result of Bartlett's test showed that the significance level for all variables was less than 0.05 (Sig < 0.05). Therefore, there was no sufficient evidence to reject the null hypothesis, and the research hypothesis regarding the correlation of the data was confirmed.

Figure 1

A Model for Developing Adjunct Faculty Collaboration at Islamic Azad University



As depicted in Figure 1, the research model and the path coefficients, along with the R^2 values for the dimensions and components related to the development of adjunct faculty collaboration based on university missions, were obtained from the PLS software output. The R^2 values indicate the relationships between the components. Among the dimensions and components in the model, the highest coefficient corresponds to the Self-efficacy component from the Individual Competencies dimension, with a path coefficient of 0.914 and an R^2 value of 0.823, the highest among all dimensions and components. In the Professional Competencies dimension, the highest path coefficient is attributed to the Teaching Technology component, with a

value of 0.825 and an R^2 of 0.682. In the Organizational Competencies dimension, the highest path coefficient belongs to the Job Identity component, with a value of 0.623 and an R^2 of 0.646.

The results in suggested that the interactive effect was not significant ($P < 0.05$). Therefore, the hypothesis of regression homogeneity was confirmed for all dependent variables. Moreover, Box's M test equaled 7.75 with $F(4, 7119.18) = 1.15$, which was not significant ($P < 0.05$), showing the equivalence of the covariances. Table 4 reports the ANOVA of the effect of BBL strategies on mathematics, science, and social competence.

Table 4

Path Analysis Results

Dimension	SD	Significance Level	t-value	Standard Coefficient
Three Competencies	0.035	0.000	25.158	0.746

Based on the research model in Figure 1 and the path analysis results in Table 4, a path coefficient of 0.746 exists between the exogenous and endogenous dimensions. Additionally, since the t-value (25.158) is outside the range of (-2.58, 2.58), the significance of the Individual, Professional, and Organizational Competencies is confirmed at the 99% level. By examining the t-values of the components in all three dimensions, we find a significant relationship between all the components of these dimensions.

Professional Competencies Dimension

1. **Service Delivery Skills:** One of the most important components of the professional competencies dimension for adjunct faculty members is service delivery skills. These skills encompass teaching, education, research, and interpersonal skills. These areas align with the university's main mission in three key domains: education, research, and service provision. Teaching skills refer to the adjunct faculty's ability to effectively deliver course content in the classroom. Educational skills relate to their capacity to plan curricula and instructional activities in the academic environment. Research skills involve designing and conducting research projects, while interpersonal skills focus on creating effective communication with colleagues and students in the workplace.
2. **Teaching Technology:** Working with students to teach and guide them is a stressful task that requires managing behaviors, maintaining focus, and encouraging active participation in the learning process. To overcome these challenges, especially in the era of information technology, modern teaching technologies must be employed. The term "teaching technology" refers to general principles and instructional strategies used to manage the classroom. The choice of teaching technology depends on strategies suitable for adjunct faculty, considering the educational philosophy, classroom demographics, subject areas, and the goals of the university where they teach.
3. **Scientific Production:** Another crucial factor in the professional competencies dimension is scientific production. This includes authoring or translating specialized books, publishing influential articles in prestigious national and international academic journals, presenting impactful papers at scientific conferences, conducting continuous

research and delivering research outputs, participating in university scientific projects, and creating educational content. These activities allow adjunct faculty to add value and respond to the demands of their academic environment.

4. **Educational Innovation:** Educational innovation plays a pivotal role in educational reform. The core of teaching lies in providing a conducive learning environment, fostering interaction, and supporting the learning process of students. The methods of teaching and learning are directly linked to the creativity of learners. Adjunct faculty members can assist students by creating dynamic and stimulating learning experiences that encourage them to explore and learn according to their interests and abilities, thereby fostering creativity. Educational innovation can be seen in areas such as developing and implementing new curricula, creating and producing educational content, offering creative solutions tailored to current platforms, utilizing new media and educational technologies, and mastering content selection based on educational objectives.

Organizational Competencies Dimension

Organizational competencies refer to the factors that relate to adjunct faculty members operating within academic environments. These competencies are drawn from an analysis of managerial tasks and a review of organizational conditions within universities.

1. **Support and Backing:** "Identification and guidance," "empowerment," and "facilitating impact" are key indicators of support and backing in the organizational competencies dimension. Adjunct faculty must be empowered to create an open academic environment that fosters student progress, supervise and carry out teaching and internship-related tasks, provide thesis supervision at various academic levels, actively support academic organizations, and demonstrate efficiency in oversight.
2. **Participation in Scientific Development:** Scientific development refers to growth accompanied by changes in attitudes and transformation in social institutions, enabling greater innovation and utilization of resources. Adjunct faculty are expected to participate in capacity-building programs in their specialized fields, attend councils, working groups, and

committees, collaborate in establishing research centers and incubators, and contribute to university science and technology companies.

3. **Organizational Ethics:** Organizational ethics can significantly help institutions reduce organizational tensions and achieve their goals. Adjunct faculty, as role models for students, must uphold not only their academic duties but also moral responsibilities. Therefore, many universities and higher education institutions have developed ethical guidelines. Organizational ethics indicators include adhering to university values, goals, programs, and rules, respecting colleagues, promoting organizational culture, maintaining professional interactions with colleagues, prioritizing collective interests over individual benefits, and fostering a sense of commitment and belonging.
4. **Job Identity:** Job identity encompasses evaluating skills and personal values related to one's job, and it significantly influences the motivation of adjunct faculty members. A strong sense of job identity encourages adjunct faculty to not only fulfill their usual duties but also to engage in tasks that require higher levels of motivation. Job identity fosters a sense of belonging, commitment, mutual respect, and collaboration among adjunct faculty, especially within the university community.

Individual Competencies Dimension

Individual competencies focus on factors related to the personal attributes of adjunct faculty. These competencies aim to develop and enhance the individual characteristics that contribute to professional success.

1. **Self-Efficacy:** Self-efficacy among adjunct faculty is a critical factor linked to positive educational behavior and student success. It is a key factor in individual competencies that influences the faculty's personal and professional performance, including classroom management and teaching styles. Self-efficacy in educational settings encompasses the ability to plan lessons and achieve educational objectives.
2. **Job Commitment:** Job commitment reflects an attitude of loyalty to the university and a continuous process of engagement in university decision-making. It highlights the faculty's dedication to the university's success and well-being. Job commitment also signifies adjunct faculty's

willingness to actively participate in university activities, maintain job satisfaction, and demonstrate loyalty to the institution.

3. **Foresight:** Foresight involves identifying, inventing, presenting, testing, and evaluating possible and probable futures to select preferred futures based on societal values. Adjunct faculty members, with their acquired skills, should align themselves with their environment to identify future needs in education, research, and social services.
4. **Service to Society:** Service to society is a critical individual competency. Adjunct faculty are expected to demonstrate leadership in social changes, participate in academic theorization, promote and expand entrepreneurial culture, provide social consultations, engage in civic activities, and offer consulting services to industries and social organizations. These activities align with the university's mission of responding to societal needs.

4. Discussion and Conclusion

The present study aimed to provide a model for the development of adjunct faculty collaboration in the Islamic Azad University, focusing on the dimensions of professional, organizational, and individual competencies. The results of both exploratory and confirmatory factor analyses revealed that the key components influencing adjunct faculty collaboration include service delivery skills, job commitment, teaching technology, scientific production, educational innovation, self-efficacy, job identity, foresight, service to society, organizational ethics, participation in scientific development, and support and backing. These findings are aligned with previous research, emphasizing the multifaceted role of adjunct faculty in higher education and their significant contributions to academic institutions (Buch et al., 2017; Ma, 2022).

The results indicate that service delivery skills are one of the most critical factors in professional competencies. This finding is consistent with the literature emphasizing the importance of adjunct faculty's abilities in teaching, research, and interpersonal communication (Hoyt, 2012). Effective service delivery, including teaching and research, is fundamental to achieving the core missions of universities (Betts et al., 2011). This is further supported by Aldemir and Ardley (2014), who suggest that adjunct faculty must excel

in these areas to maintain high-quality educational standards. Teaching technology also emerged as a significant factor, highlighting the growing role of technology in overcoming the challenges of teaching and learning in modern classrooms. This aligns with the study by Taddei and Ricevuto (2021), who noted that the use of technology facilitates engagement, enhances learning outcomes, and supports adjunct faculty in managing their classrooms effectively (Taddei & Ricevuto, 2021).

Additionally, the importance of scientific production as a key factor in professional competencies echoes the findings of prior research, which underscores the need for adjunct faculty to actively participate in producing scholarly work (Leslie, 2019). Scientific output, including publishing in prestigious journals and presenting at conferences, not only enhances the reputation of the adjunct faculty but also contributes to the university's academic standing (Chen et al., 2021). Educational innovation, another critical factor, is closely linked to fostering creativity among students, which has been widely recognized in the literature as an essential component of effective teaching (Fedock et al., 2019). Innovative teaching strategies allow adjunct faculty to engage students more deeply and create dynamic learning environments (Friesen, 2012).

The results also highlight the significance of organizational competencies, particularly support and backing, as well as participation in scientific development and organizational ethics. Support and backing are essential for adjunct faculty to thrive in their roles. Research by Johnson and Pollino (2021) supports the idea that adjunct faculty benefit significantly from institutional support, particularly in terms of guidance and professional development (Johnson & Pollino, 2021). Such support enables them to effectively engage with students and participate in academic initiatives, such as supervising internships and guiding student research (Dunker & Manning, 2018; Dunker, 2014; Dunker et al., 2017).

Participation in scientific development emerged as another key component, underscoring the importance of adjunct faculty's involvement in academic committees, research centers, and innovation hubs. This aligns with studies suggesting that adjunct faculty's active participation in these areas enhances their sense of belonging and engagement within the university community (Adekalu et al., 2018). Moreover, organizational ethics were identified as a crucial factor in organizational competencies, reinforcing the idea that adjunct faculty play a critical role in modeling ethical behavior for students (Hannafin, 2017).

Adhering to the values and regulations of the institution, maintaining respect for colleagues, and promoting organizational culture are key aspects of creating a positive and productive academic environment (Altenberger et al., 2021).

Individual competencies, including self-efficacy, job commitment, foresight, and service to society, also play a pivotal role in adjunct faculty collaboration. The findings suggest that self-efficacy is one of the most powerful predictors of adjunct faculty's success. This is consistent with Bandura's theory of self-efficacy, which posits that individuals with high levels of self-efficacy are more likely to set ambitious goals, persevere in the face of challenges, and achieve better outcomes (Byers, 2024). In the context of adjunct faculty, self-efficacy is particularly important for managing classrooms, designing curricula, and achieving educational objectives (Ahmed, 2018).

Job commitment also emerged as a key factor, indicating that adjunct faculty who feel a sense of loyalty to their institutions are more likely to contribute actively to the university's mission. This finding aligns with the work of Barnett (2017), who emphasized that job satisfaction and commitment are critical for retaining adjunct faculty and ensuring their long-term engagement (Barnett, 2017, 2019). Foresight, or the ability to anticipate future trends and adapt to changing academic landscapes, is another critical competency. This finding is supported by previous studies that emphasize the importance of forward-thinking and adaptability in higher education. Finally, service to society, a key component of individual competencies, reflects the broader role of adjunct faculty in contributing to societal needs through community engagement and knowledge dissemination (Adekalu et al., 2018).

While the study provides valuable insights into the factors influencing adjunct faculty collaboration, several limitations should be noted. First, the study was conducted within the context of Islamic Azad University, which may limit the generalizability of the findings to other academic institutions with different structures, missions, and faculty compositions. Further research in a variety of university settings, both private and public, could provide a more comprehensive understanding of adjunct faculty collaboration. Second, the data collection method relied on self-reported questionnaires, which could introduce bias due to the respondents' subjective perceptions. Although measures were taken to ensure reliability and validity, such as using established instruments and conducting exploratory and confirmatory factor analyses, the potential for response

bias remains. Additionally, the study focused solely on adjunct faculty, and future research could benefit from including perspectives from full-time faculty, administrative staff, and students to gain a holistic view of faculty collaboration in higher education.

Future research could explore several avenues to expand upon the findings of this study. First, longitudinal studies could be conducted to examine how adjunct faculty collaboration evolves over time, particularly in response to institutional changes, such as the introduction of new teaching technologies or shifts in university policies. Longitudinal data would provide a deeper understanding of the long-term impacts of professional development programs, institutional support, and technological integration on adjunct faculty collaboration. Second, future studies could investigate the role of cultural and regional differences in shaping adjunct faculty collaboration. For example, comparative studies between adjunct faculty in different countries or regions could reveal how cultural norms, educational policies, and labor practices influence faculty collaboration and engagement (Green, 2019). Finally, more qualitative research, such as interviews or focus groups, could provide richer, more nuanced insights into the experiences of adjunct faculty and their perceptions of collaboration, job satisfaction, and institutional support.

The findings of this study offer several practical implications for universities and educational institutions. First, universities should prioritize the development of adjunct faculty's professional competencies by offering targeted training programs that enhance their teaching, research, and interpersonal skills. These programs should focus on the effective use of teaching technologies, innovative pedagogical strategies, and scientific production, as these factors are critical for adjunct faculty success (Taddei & Ricevuto, 2021). Additionally, universities should invest in mentorship and support programs that facilitate adjunct faculty's integration into the academic community. By providing ongoing support and opportunities for professional growth, institutions can foster a greater sense of job commitment and engagement among adjunct faculty (Johnson, 2016).

Moreover, universities should recognize the importance of organizational ethics and promote a culture of respect, collaboration, and transparency. Establishing clear ethical guidelines and encouraging faculty to model these behaviors can enhance the overall academic environment and support the development of adjunct faculty (Hannafin, 2017). Institutions should also ensure that adjunct faculty have

opportunities to participate in decision-making processes, such as serving on committees or contributing to curriculum development. This not only increases their engagement but also strengthens their sense of job identity and organizational commitment (Betts et al., 2011).

Finally, universities should encourage adjunct faculty to engage in community service and societal contributions. Offering incentives or recognition for community engagement activities can motivate adjunct faculty to participate in outreach programs, social consulting, and entrepreneurial initiatives, aligning their work with the broader mission of the university (Adekalu et al., 2018). By fostering a culture of collaboration, innovation, and social responsibility, universities can create an environment where adjunct faculty feel valued, supported, and motivated to contribute to the institution's success.

In conclusion, this study provides a comprehensive model for the development of adjunct faculty collaboration, highlighting the importance of professional, organizational, and individual competencies. The findings suggest that universities can enhance adjunct faculty engagement and collaboration by focusing on service delivery skills, teaching technology, scientific production, organizational support, and self-efficacy. By addressing these factors through targeted interventions, universities can foster a more collaborative and effective academic environment, ultimately benefiting both faculty and students.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We hereby thank all participants for agreeing to record the interview and participate in the research.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

All procedures performed in studies involving human participants were under the ethical standards of the institutional and, or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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