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Testing the relationship between demographic diversity types and innovative work behavior / an analytical study of the opinions of a sample of professors at Al-Qadisiyah University

Saja Jewad Hussein
sajajewad@gmail.com
University of Al-Qadisiyah

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Corresponding Author : *Saja Jewad Hussein*

Abstract : This study investigates the impact of demographic diversity—specifically age, gender, and tenure—on innovative work behavior (IWB) among faculty members at Al-Qadisiyah University in Iraq. While previous global research has examined workforce diversity and innovation, few studies have focused on the academic sector in developing contexts, particularly within Iraq. Addressing this gap, the study aims to assess how visible demographic variables affect faculty engagement in generating, promoting, and implementing new ideas.

A quantitative, cross-sectional design was employed. Data were collected from a purposive sample of 306 faculty members across 18 colleges using a validated questionnaire. The measurement scales were derived from Janssen (2000) for IWB and Harrison & Klein (2007) for demographic diversity indices. The data were analyzed using SPSS and AMOS to test both correlation and effect hypotheses.

Results revealed statistically significant positive relationships between each demographic variable and IWB. Among them, tenure diversity showed the highest predictive strength. The study concludes that demographic variety plays a facilitative role in fostering innovation among faculty when properly understood and managed.

Keywords: Demographic Diversity,Innovative Work Behavior, Age Diversity, Gender, Tenure.

INTRODUCTION: In recent years, demographic diversity has emerged as a defining characteristic of modern workplaces, particularly in knowledge-based sectors such as higher education. Age, gender, and tenure diversity are no longer peripheral concerns but core elements influencing organizational behavior and performance. As universities navigate increasingly dynamic environments, faculty members' ability to generate, promote, and implement innovative ideas—referred to as Innovative Work Behavior (IWB)—has become essential for institutional adaptation and excellence.

While demographic diversity offers rich opportunities for cross-pollination of ideas and perspectives, it also introduces challenges related to communication, cohesion, and leadership. Prior global studies have examined the complex effects of workforce diversity on innovation (Qi *et al.,* 2022; Xie *et al.,* 2020), but these investigations are primarily centered on corporate or Western academic contexts. The extent to which such diversity fosters or hinders IWB within public universities in Iraq remains largely unexplored.

This gap is particularly significant in the context of Iraqi higher education, where faculty structures are experiencing gradual generational shifts and gender diversification, but without institutional policies designed to leverage these trends strategically. Although some scholars suggest that diversity drives creativity through cognitive variation (Harrison & Klein, 2007), others warn that unmanaged diversity may lead to fragmentation (Van Knippenberg & Schippers, 2007). The lack of empirical studies linking demographic diversity to IWB in Middle Eastern academic settings underscores the need for further investigation.

This study aims to bridge this gap by empirically examining the relationship between demographic diversity and IWB among faculty members at Al-Qadisiyah University. Specifically, it investigates whether age, gender, and tenure diversity contribute to innovative behavior within academic workgroups.

Research Methodology

Research Problem

While diversity is widely acknowledged as a potential driver of innovation in organizational settings, its practical implications remain under-explored in academic institutions, particularly in developing countries like Iraq. Universities in Iraq are undergoing gradual shifts in workforce demographics, including variations in age, gender, and

tenure among faculty members. However, there is a lack of empirical evidence on how these observable demographic factors influence innovative work behavior (IWB), which includes idea generation, promotion, and implementation.

Most existing literature on demographic diversity and innovation focuses on corporate environments or higher education systems in Western contexts. Little is known about whether and how demographic variety affects creativity and innovation within Iraqi universities, which often operate in rigid administrative and cultural structures. Moreover, theoretical models suggest both positive and negative outcomes of diversity on team dynamics and performance (Harrison & Klein, 2007; Van Knippenberg & Schippers, 2007), but few studies have tested these models within Middle Eastern academic settings.

This study addresses this gap by investigating whether demographic diversity in age, gender, and tenure correlates with and influences the innovative behavior of faculty members at Al-Qadisiyah University. The goal is to understand whether these demographic factors act as facilitators or barriers to innovation within academic teams.

Accordingly, the research seeks to answer the following questions:

A. What is the level of demographic diversity (age, gender, tenure) among faculty members at Al-Qadisiyah University?

B. How prevalent is innovative work behavior (IWB) among faculty members in terms of idea generation, idea promotion, and implementation?

C. Is there a statistically significant correlation between demographic diversity and innovative work behavior?

D. To what extent does demographic diversity predict or influence the innovative work behavior of university faculty?

Importance of the Study

Understanding the role of demographic diversity in shaping innovative work behavior (IWB) is vital for modern academic institutions aiming to enhance performance and adaptability. Despite global interest in the diversity–innovation nexus, there remains a lack of empirical evidence from the context of Iraqi higher education. This study is important for several reasons:

- **Theoretical Contribution**: The study adds to the limited body of knowledge concerning the influence of demographic diversity on innovative work behavior (IWB) within academic institutions in Iraq, an area rarely addressed in prior research.
- **Contextual Relevance**: It investigates a phenomenon—faculty innovation—within the unique cultural and institutional structure of Iraqi public universities, offering insights not previously explored in the literature.
- **Practical Application**: The findings provide decision-makers in higher education with data-driven recommendations for designing inclusive policies that enhance team innovation and creative performance.
- **Faculty Development**: It highlights how different demographic variables (age, gender, tenure) relate to idea generation, promotion, and implementation, helping universities to tailor their training and professional development programs accordingly.
- **Strategic Planning**: As Iraqi universities face increasing demographic shifts (e.g., generational turnover, increased gender diversity), this study offers timely guidance on leveraging these changes for innovation and institutional sustainability.

Research Objectives

This study aims to explore and analyze the relationship between demographic diversity and innovative work behavior (IWB) among university faculty. The specific objectives of the study are as follows:

1. **To assess** the level of demographic diversity (in terms of age, gender, and tenure) among faculty members at Al-Qadisiyah University.
2. **To evaluate** the degree to which innovative work behavior is exhibited by faculty members across its three dimensions: idea generation, idea promotion, and idea implementation.
3. **To examine** the nature of the correlation between demographic diversity and innovative work behavior within the academic context.
4. **To determine** the extent to which demographic diversity can statistically predict or influence innovative work behavior among university faculty.

Research Hypotheses

Based on the research problem, objectives, and theoretical framework, the following hypotheses were developed to be tested empirically in this study:

- **Main Hypothesis 1 – Correlation Hypothesis**:

There is a statistically significant correlation between demographic diversity (age, gender, tenure) and innovative work behavior among faculty members at Al-Qadisiyah University.

- **Main Hypothesis 2 – Effect Hypothesis**:

Demographic diversity (age, gender, tenure) has a statistically significant effect on innovative work behavior among faculty members at Al-Qadisiyah University.

The Conceptual Framework

The conceptual framework of this study is grounded in previous empirical literature and theoretical models that highlight the potential relationship between demographic diversity and innovative work behavior (IWB). The framework posits that three dimensions of demographic diversity—**age diversity**, **gender diversity**, and **tenure diversity**—are hypothesized to influence IWB, which consists of three behavioral dimensions: **idea generation**, **idea promotion**, and **idea implementation**.

The model assumes that each type of demographic diversity may contribute differently to innovative behavior and that the strength of these contributions can be measured and statistically verified through empirical analysis.

The Figure 1 below illustrates the hypothesized model, in which a **bidirectional arrow (H1)** represents the correlation hypothesis between the two core constructs, and a **unidirectional arrow (H2)** reflects the direct effect of demographic diversity on innovative work behavior.

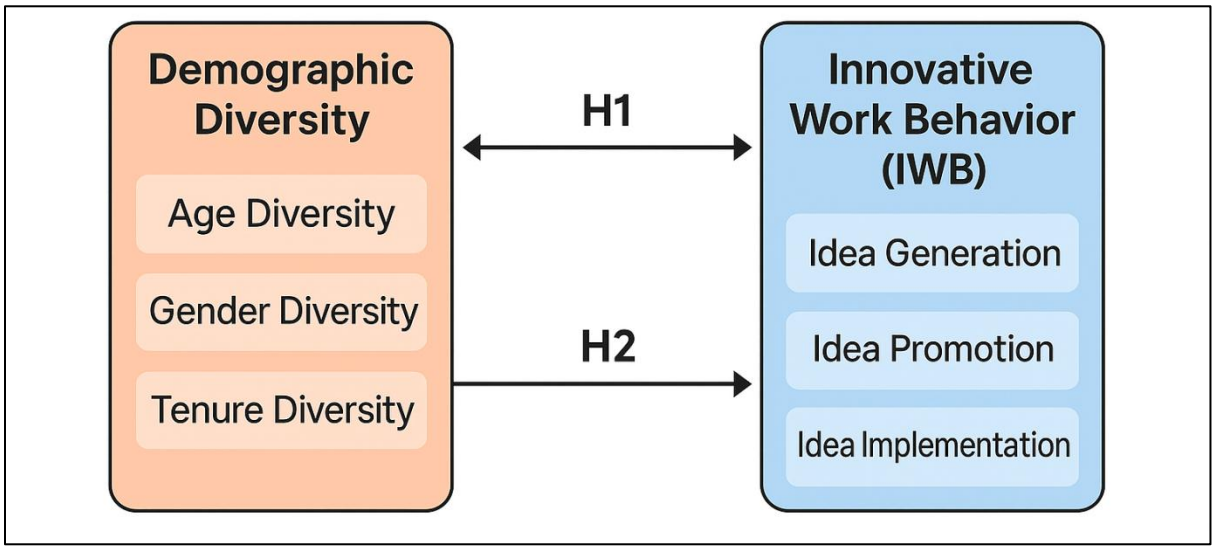


Figure 1 – The Hypothesized Research Model

Population and Sample

The population of this study consists of faculty members employed at Al-Qadisiyah University, one of Iraq's prominent public universities. The university comprises 18 colleges with diverse academic specializations, totaling **1,949** faculty members as of the most recent institutional statistics.

To obtain a representative view of the demographic diversity and innovative work behavior (IWB) across departments, a **purposive non-probability sampling method** was adopted. This technique was chosen due to its effectiveness in targeting individuals with the most relevant knowledge and exposure to the study variables—namely, diversity in age, gender, and tenure, as well as involvement in innovative academic practices.

A total of **341 questionnaires** were distributed physically through trained facilitators embedded within each college. Of these, **306 completed questionnaires** were returned and deemed valid for statistical analysis, resulting in a **response rate of approximately 89.7%**. This sample size represents roughly **15.7%** of the total faculty population, which is considered acceptable for quantitative research of this nature.

The high response rate was facilitated by the researchers' collaboration with senior academic staff and internal university coordinators, ensuring that participants were adequately informed about the purpose of the study and the confidentiality of their responses.

Data Collection Methods

The data for this study were collected through two complementary approaches:

1. **Theoretical Foundation**: The theoretical framework was developed based on a diverse range of academic sources, including peer-reviewed journal articles, scholarly books, doctoral dissertations, and master's theses related to the study's core variables. Special emphasis was placed on sourcing validated concepts and frameworks from internationally recognized literature in the fields of organizational behavior and human resource management.
2. **Empirical Fieldwork**: The primary instrument used to collect empirical data was a structured questionnaire. Due to the absence of a pre-existing tool that fully captured all dimensions of the study, the researchers developed a

customized instrument based on well-established and validated scales from prior studies. After drafting the initial version, the questionnaire was submitted to a panel of academic experts specializing in organizational behavior and management for evaluation and content validation. Their feedback led to several refinements to ensure the instrument was culturally appropriate and conceptually sound for the Iraqi academic context.

The final version of the questionnaire measured the study's two core variables:

1. **Demographic Diversity** was assessed using three indicators: **age**, **gender**, and **tenure**. These were operationalized using entropy and variance-based indices, following the guidelines of Harrison and Klein (2007), allowing for objective quantification of heterogeneity within faculty groups.
2. **Innovative Work Behavior (IWB)** was measured using the scale developed by Janssen (2001), which consists of three dimensions: **idea generation**, **idea promotion**, and **idea implementation**. Each dimension included three items, measured using a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." This scale was chosen for its clarity, conceptual integrity, and widespread validation in creativity and innovation research (see Anderson *et al.,* 2014).

The questionnaire was prepared in Arabic to ensure linguistic clarity for participants and was distributed manually through academic coordinators within each college.

Literature Review

Demographic Diversity – Theoretical Overview

Demographic diversity refers to the observable differences among members of a group, including characteristics such as age, gender, tenure, educational background, and ethnicity (Jackson *et al.,* 1995; Brixy *et al.,* 2020). Pfeffer (1983), who pioneered the concept of *organizational demography*, defines demographic diversity as the composition of a group based on measurable traits that influence group processes and performance outcomes.

According to Tsui, Xin, and Egan (1995), demographic diversity typically includes **surface-level attributes** such as age, gender, and years of service, which are highly visible and often shape group dynamics. These attributes are easier to quantify than deeper cognitive or psychological variables and are thus frequently used as **proxies for underlying social and perceptual processes** (Kilduff, Angelmar, & Mehra, 2000; Harrison *et al.,* 1998).

Lawrence (1997) proposed a classification system for demographic characteristics, dividing them into three major categories:

- **Salient attributes** (e.g., age, gender, race),
- **Organizationally relevant attributes** (e.g., tenure, departmental affiliation),
- **Social attributes** (e.g., marital status).

These categories exclude psychological traits, as organizational demography focuses on observable, measurable differences rather than abstract personality-based variables.

Although some scholars have criticized this approach for oversimplifying the complex dynamics of diversity, it remains a foundational framework for examining how group composition affects organizational processes.

In earlier research, demographic diversity was often seen as the **primary dimension of team diversity**, with a group considered diverse if its members differed in visible attributes such as age, gender, or ethnicity (Hartono *et al.,* 2020). Due to their visibility, these characteristics are also referred to as **surface-level diversity** and are known to influence first impressions and early-stage social categorization (Harrison *et al.,* 1998; Brixy *et al.,* 2020; Bell *et al.,* 2011).

Harrison and Klein (2007) argue that demographic diversity can lead to **social segmentation** and the formation of subgroups within teams, which may weaken group cohesion and increase intra-group conflict.

Dimensions of Demographic Diversity

Demographic diversity is a multidimensional concept that encompasses a range of observable characteristics. In the context of organizational behavior, this study focuses on three key dimensions that are both measurable and highly relevant in academic environments: **age diversity**, **gender diversity**, and **tenure diversity**. Each of these dimensions reflects a distinct facet of how faculty members vary in their backgrounds and experiences, potentially influencing workplace dynamics and innovative behaviors.

Age Diversity

Age diversity refers to the presence of individuals from different age groups within the same organization or workgroup. It is considered one of the most visible and salient forms of demographic diversity (Bründermann, 2022). According to Adeite (2023), age diversity reflects an organization's capacity to include and integrate employees across generational lines, from younger entrants to senior professionals.

Kumudha and Jennet (2018) define it as the ability to accommodate all age ranges within the work environment. This diversity facilitates knowledge transfer, cross-generational learning, and the exchange of ideas. Younger employees often contribute fresh perspectives and technological adaptability, while older employees bring accumulated expertise, experience-based judgment, and organizational memory. As a result, age-diverse teams are more likely to produce comprehensive, innovative, and well-balanced solutions (Adeite, 2023).

Moreover, age diversity promotes a culture of continuous learning and professional development, enhancing both group performance and decision-making quality. However, research has also noted that **age-related biases** persist in the workplace. For example, Schneid *et al.* (2016) observed that employers tend to favor younger applicants in processes such as recruitment, training, and promotion.

Shore and Goldberg (2004) argue that older workers are often stereotyped as less productive, less adaptable, and harder to train. Similarly, Ringenbach and Jacobs (1994) found that such assumptions contribute to age-based discrimination, despite evidence suggesting that older employees continue to add value through stability, loyalty, and mentorship.

Gender Diversity

Gender diversity refers to the representation of both men and women within organizational teams, and it has been shown to influence group dynamics and decision-making processes. Zhang and Hou (2012) suggest that gender-diverse teams are often **psychologically segmented**, as men and women may exhibit distinct behavioral patterns and communication styles within group settings.

A growing body of research highlights both the **advantages and disadvantages** of gender diversity. On the positive side, diverse teams benefit from **multiple perspectives, broader experience sets, and wider professional networks**, which collectively enhance strategic decision-making and innovation (Tilstra, 2020). Studies have shown that gender diversity in leadership—particularly in innovation-focused organizations—can contribute to improved performance outcomes (Desvaux *et al.,* 2017; Dezsö & Ross, 2012).

Dezsö and Ross (2012) found that female representation in senior management teams led to better firm performance in companies that prioritize creativity. Interestingly, the authors did not find any performance decline in organizations that included women in leadership roles—even in non-innovative sectors.

Similarly, Adams and Ferreira (2009) reported that male-dominated boards tended to perform worse than those with higher female representation. Hoogendoorn *et al.* (2013) further confirmed that **gender-diverse teams often exhibit higher performance**, especially when mediated by factors such as team tenure and members' personality traits (Tilstra, 2020).

However, gender diversity may also introduce **coordination and communication challenges**, especially in teams with insufficient inclusion practices or in culturally homogenous environments. Thus, while gender diversity holds significant potential, its benefits depend heavily on how organizations manage and integrate diverse identities within their structures.

Tenure Diversity

Tenure diversity refers to the variation in the length of time that individuals have worked within an organization. It is considered a **task-related dimension of demographic diversity**, as it is closely tied to accumulated knowledge, organizational familiarity, and work-related competencies (Zhou, 2020). Tenure is typically defined as the duration between the current year and the year an employee joined the organization, and it reflects the diversity in work experience among team members (Gilson *et al.,* 2013).

Research suggests that the **effects of tenure diversity may evolve over time** as group members become more experienced in working together. On the one hand, extended tenure within a group may lead individuals to **challenge initial stereotypes** formed about their colleagues, thereby promoting more accurate perceptions and stronger interpersonal trust. On the other hand, tenure diversity may also expose deeper interpersonal and procedural differences that could **hinder group coordination and cohesion** (Van Knippenberg & Schippers, 2007).

Zhou (2020) notes that tenure-diverse teams often include both **long-tenured employees**—who understand the organizational structure, processes, and informal networks—and **newer members**, who may lack institutional knowledge but bring fresh ideas and perspectives. This contrast can be a strength when effectively managed, but it may also create challenges if differences in experience levels lead to misunderstandings or power imbalances.

In contrast, **tenure-homogeneous teams**, where all members joined the organization around the same time, often benefit from shared experiences and cultural alignment. These teams typically show greater ease in communication and task execution, particularly when facing ambiguity or rapid change (Gilson *et al.,* 2013).

Thus, tenure diversity presents both opportunities and risks depending on how well it is aligned with team tasks and leadership practices.

Innovative Work Behavior (IWB) - Theoretical Overview

In today's rapidly changing organizational environments, the ability to innovate continuously—whether in products, services, or internal processes—has become a critical success factor. Over the past two decades, scholarly interest in workplace innovation has increased significantly (Mohammed & Al-Qaisi, 2022). Innovation can occur at multiple levels: individual, team, or organizational (Bysted & Jespersen, 2014). This study focuses specifically on the **individual level**, where innovation is often initiated through proactive employee behaviors aimed at solving problems or creating new value (Karavasilis, 2019).

Innovative Work Behavior (IWB) is defined as a multi-stage process that includes **idea generation, idea promotion, and idea implementation** (Scott & Bruce, 1994). It involves both cognitive and physical work actions that employees undertake either individually or collectively to accomplish tasks that support the organization's objectives (Messmann, 2012).

Janssen (2000) defined IWB as the intentional introduction and application of new and useful ideas within a role, group, or organization. Similarly, Tidd and Bessant (2014) conceptualized it as the practical enactment of new techniques, methods, or procedures that add tangible value to the workplace.

Other scholars have provided complementary definitions. Thurlings *et al.* (2015) describe IWB as a process encompassing the **creation, development, application, and refinement** of ideas. Escribá-Carda *et al.* (2017) view it as a manifestation of individual capacity for innovation. According to Kmieciak (2020), IWB represents the **deliberate generation and execution** of new concepts to enhance individual, group, or organizational performance.

Bos-Nehles *et al.* (2017) characterize IWB as an **internal dynamic** that results in changes in processes, products, or services. De Spiegelaere *et al.* (2014) reinforce this view, framing IWB as any employee behavior aimed at generating, presenting, or applying new ideas within their roles or organizational units. Bawuro *et al.* (2019) emphasize the strategic value of IWB in driving competitive advantage and sustainability through innovation.

IWB remains a foundational element in enabling organizational change, long-term adaptability, and market relevance (Akram *et al.,* 2016). Organizations that aim to maintain a sustainable edge must cultivate creative workforces and empower individuals to engage persistently in innovation-related behavior (Moll, 2015).

While scholars have proposed various dimensional models of IWB—ranging from two to five stages—the most widely accepted framework is that of Janssen (2000), who proposed a **three-dimensional model** and developed a reliable 9-item scale that remains prevalent in innovation research due to its simplicity and strong psychometric properties.

Dimensions of Innovative Work Behavior

Innovative Work Behavior (IWB) is widely acknowledged as a multi-dimensional construct encompassing various stages of idea-related activities. Researchers have proposed different models ranging from two to five dimensions; however, the most commonly accepted framework is that of Janssen (2000), which conceptualizes IWB as consisting of three interrelated dimensions: **idea generation**, **idea promotion**, and **idea implementation**.

These dimensions reflect the cognitive and behavioral steps employees take when contributing to organizational innovation. In this study, the three-dimensional model is adopted as it offers a clear, validated, and comprehensive approach to capturing the full scope of innovative work behavior in the academic context.

Idea Generation

Idea generation refers to the initial phase of innovation in which employees **formulate new and useful ideas** that can benefit organizational functioning (Woodman *et al.,* 1993). It often begins with the recognition of a **problem, opportunity, or need for change**, and may arise spontaneously or in response to external stimuli (de Jong & den Hartog, 2010).

Kanter (1988) emphasized that idea generation can be driven by a desire to improve existing conditions or by the need to respond to emerging threats. This stage involves producing ideas that are novel relative to the individual or group context, yet feasible and relevant to the organization's goals (Niesen *et al.,* 2018).

Janssen (2000) describes idea generation as the deliberate creation of original and applicable ideas in the workplace. It is not merely a creative burst but a **structured process** in which employees integrate existing knowledge with novel concepts to solve problems or capitalize on new opportunities (Gumilang & Sunaryo, 2021). As such, idea generation forms the foundation upon which the subsequent stages of innovation—promotion and implementation—are built.

Idea Promotion

Idea promotion represents the second phase of the innovative work behavior process and involves the social efforts employees undertake to gain support for their ideas. This stage emphasizes the **social dimension of creativity**, where individuals seek allies, mentors, or champions who have the authority and influence to help advance the proposed ideas (Lukes & Stephan, 2017).

Kanter (1988) described idea promotion as a critical step following idea generation, where the individual must not only communicate the idea but also secure **legitimacy and endorsement** within the organization. Without adequate promotion, even the most promising ideas may be ignored or resisted due to lack of visibility or organizational support.

Bawuro *et al.* (2019) highlight that idea promotion includes **advocating for the idea, networking**, and mobilizing resources to ensure its survival and potential implementation. This stage involves various forms of organizational communication—formal and informal—as the idea originator works to transform an individual insight into a collective opportunity.

Thus, idea promotion is not simply about sharing an idea, but about **strategically navigating organizational structures** to build alliances and gather momentum for action. It is a dynamic and interactive process that bridges creativity with practical organizational change.

Idea Implementation

Idea implementation represents the final stage of the innovative work behavior process. It involves translating ideas into concrete outcomes, integrating them into regular work routines, and testing their practical application (Medhaug & Mossige, 2020). At this stage, abstract concepts are transformed into tangible products, services, procedures, or practices that can be used, scaled, or institutionalized within the organization (Reuvers *et al.,* 2008).

Widmann and Mulder (2018) emphasize that implementation also includes evaluating results, refining the initial idea, and adapting it based on feedback and observed outcomes. Success in this phase often depends on prior idea promotion efforts, especially in securing colleague support and access to necessary resources (Hellings, 2020).

According to Niesen *et al.* (2018), idea implementation entails aligning new ideas with daily operational practices. This may involve modifying workflows, introducing new tools or protocols, or encouraging team members to adopt novel behaviors. As Pajuoja (2023) explains, implementation can occur at the individual, team, or organizational level, depending on the scope and scale of the idea being introduced.

Ultimately, this stage determines whether innovation leads to real impact, as it requires sustained commitment, adaptation, and the ability to embed change into the fabric of the organization.

Theoretical Link Between Demographic Diversity and Innovative Work Behavior

In recent years, researchers have increasingly recognized innovative work behavior (IWB) as a critical skill for organizations to succeed in the knowledge-driven economy of the 21st century (Hughes *et al.,* 2018). Innovation potential is particularly enhanced in environments where employees possess **diverse skills and informational backgrounds**, which collectively expand the range of creative solutions and improve organizational productivity (Garnero & Rycx, 2014).

Demographic diversity—particularly in age, gender, and tenure—has been shown to play a significant role in shaping innovative behavior within teams. For example, **gender diversity** enhances information availability and introduces broader perspectives, thereby fostering creativity and innovation within group contexts (Xie *et al.,* 2020). Likewise, **age diversity** may contribute positively by combining theoretical knowledge with practical experience, but it can also hinder performance due to decreased social cohesion and communication barriers (Welman *et al.,* 2022).

This duality is explained through two competing theoretical perspectives:

1. The **information/decision-making perspective**, which suggests that diversity provides access to **a broader pool of knowledge and viewpoints**, thereby enhancing problem-solving.
2. The **social categorization perspective**, which argues that diversity may lead to subgroup formation and reduce team cohesion.

Tenure diversity, being task-related, also presents mixed implications. While it facilitates the spread of cognitive resources that improve task completion, tenure heterogeneity can sometimes undermine team creativity by increasing status differences and reducing integration (Runde, 2021; Horwitz & Horwitz, 2007). Studies have also shown that individuals with **longer tenure tend to exhibit stronger communication and team cohesion** compared to newer team members (Triana, 2017).

Overall, the literature suggests that demographic diversity can **both enhance and inhibit** innovative work behavior, depending on how it is managed and aligned with organizational context. This complex relationship underpins the study's hypotheses that diversity in age, gender, and tenure correlates with—and potentially influences—faculty members' engagement in IWB.

In summary, the reviewed literature highlights that demographic diversity—particularly in age, gender, and tenure—constitutes a critical factor in shaping organizational behavior and outcomes. These forms of diversity may serve as enablers of innovative work behavior (IWB), especially when teams are managed in ways that promote inclusion, knowledge sharing, and constructive engagement.

Meanwhile, IWB itself is recognized as a multi-stage process encompassing the generation, promotion, and implementation of new ideas. When supported by diverse perspectives and experiences, this behavior can lead to enhanced creativity, problem-solving capacity, and performance in academic settings.

However, the relationship between demographic diversity and IWB is not universally positive. It is influenced by social dynamics, structural factors, and contextual conditions. This study therefore aims to empirically test whether demographic diversity among university faculty members is significantly correlated with—and has a measurable effect on—their engagement in innovative work behavior.

Practical Analysis Section

The practical part of this study comprises three main analytical phases aimed at validating the research model, assessing data quality, and testing hypotheses. These phases are structured as follows:

- **Measurement Model Assessment**: Examining the scale structure, coding of variables, and the appropriateness of the instrument in representing the study's constructs.
- **Descriptive and Confirmatory Analyses**: Applying statistical methods such as confirmatory factor analysis (CFA), reliability testing, and descriptive statistics to assess the internal structure and consistency of the instrument.
- **Hypotheses Testing**: Using correlation and regression analyses to empirically test the proposed relationships between demographic diversity and innovative work behavior (IWB).

1. Measurement Scale and Variable Coding

To measure the constructs under investigation, the study employed a **five-point Likert scale** to assess respondents' levels of agreement with the questionnaire items Table 1. This scale was applied to the dependent variable (**Innovative Work Behavior**) and its three dimensions. Meanwhile, the independent variable (**Demographic Diversity**) was treated as an objective, non-latent construct and was measured using entropy and variance-based indices, Table 2.

Table 1. Likert Scale Categories

Scale Point	1	2	3	4	5
Response Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Table 2. Study Variables, Dimensions, and Coding

Main Variable	Sub-Dimension	Statistical Code	No. of Items
Demographic Diversity	Age Diversity	Agediv	Objective Measure
	Gender Diversity	Genddiv	
	Tenure Diversity	Tenudiv	
Innovative Work Behavior	Idea Generation	inno1–inno3	3
	Idea Promotion	inno4–inno6	3
	Idea Implementation	inno7–inno9	3

2. Confirmatory Factor Analysis (CFA) for Innovative Work Behavior

To validate the measurement structure of the **Innovative Work Behavior (IWB)** scale, a **Confirmatory Factor Analysis (CFA)** was conducted using **AMOS version 23**. The goal was to assess whether the nine observed items reliably represented the three latent dimensions of IWB: **Idea Generation**, **Idea Promotion**, and **Idea Implementation**.

According to Hair *et al.* (2010), factor loadings (standardized regression weights) are considered acceptable if they exceed **0.30**. All items in the model exceeded this threshold, indicating that each item adequately represented its assigned dimension Figure 2.

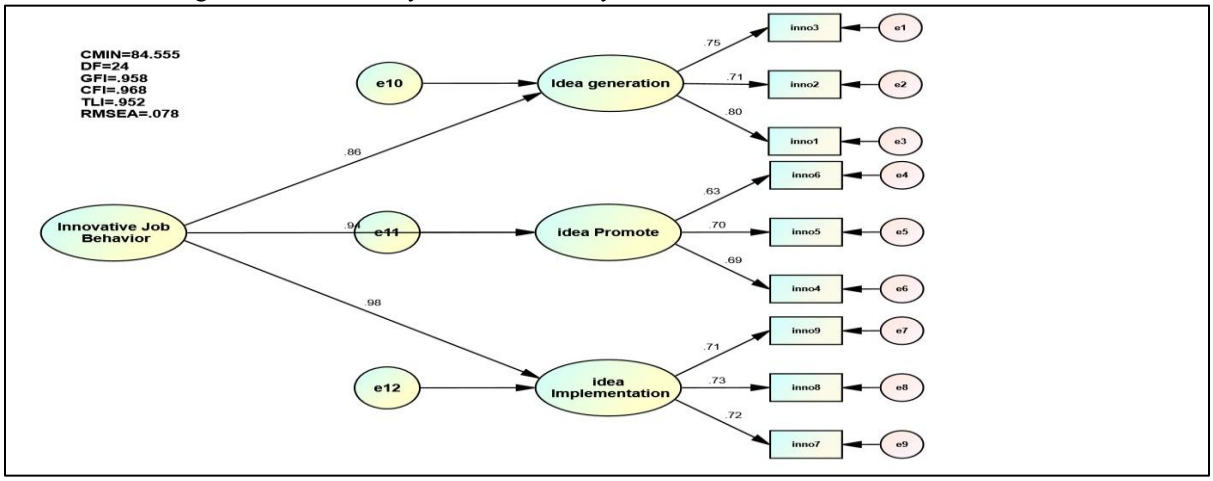
Furthermore, the model's **fit indices** demonstrated acceptable structural validity, as shown in the following table:

Table 3. Structural Fit Indices – CFA for IWB

Fit Index	Recommended Value	Model Result
CMIN/DF (Chi-Square/df)	< 5	Within threshold
GFI – Goodness of Fit Index	> 0.90	Acceptable
TLI – Tucker-Lewis Index	> 0.90	Acceptable
CFI – Comparative Fit Index	> 0.90	Acceptable
RMSEA – Root Mean Square Error Approx.	< 0.08	Acceptable

Source: *Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). Multivariate Data Analysis. Prentice Hall.*

Figure 2. Confirmatory construct validity of the Innovative Work Behavior Scale



Additionally, the critical ratios (**C.R.**) for all items were above **1.96**, and all significance levels were below **0.001**, confirming that each item significantly contributes to its latent construct Table 4.

Table 4. Standardized CFA Estimates for IWB Items

Item	Path	Dimension	S.R.W	Estimate	Std. Error	C.R.	p-value
inno1	<---	Idea Generation	.780	0.945	0.063	14.304	***
inno2	<---	Idea Generation	.758	0.965	0.066	14.545	***
inno3	<---	Idea Generation	.744	1.000	—	—	—
inno4	<---	Idea Promotion	.738	1.054	0.077	13.745	***
inno5	<---	Idea Promotion	.760	1.088	0.077	14.113	***
inno6	<---	Idea Promotion	.709	1.000	—	—	—
inno7	<---	Idea Implementation	.776	1.052	0.066	15.829	***
inno8	<---	Idea Implementation	.794	1.027	0.063	16.212	***
inno9	<---	Idea Implementation	.762	1.000	—	—	—
S.R.W: Standardized Regression Weight				**C.R.**: Critical Ratio		*** p < 0.001	

3. Structural Reliability Analysis – Cronbach's Alpha

To assess the internal consistency of the measurement instrument, **Cronbach's Alpha** coefficients were calculated for the overall **Innovative Work Behavior (IWB)** scale and its three subdimensions: **Idea Generation**, **Idea Promotion**, and **Idea Implementation**.

Cronbach's Alpha is a widely accepted measure of **scale reliability**, indicating how consistently a set of items measures an underlying construct. According to Tavakol and Dennick (2011), a reliability coefficient of **0.70 or higher** is considered acceptable for psychological and behavioral constructs.

As shown in the following table, the alpha values for all components of the IWB scale exceeded the 0.70 threshold, with values ranging from **0.77 to 0.91**, indicating a high level of internal consistency. These results confirm that the instrument demonstrates **strong reliability and coherence**, making it suitable for field application and hypothesis testing.

Table 5. Cronbach's Alpha Reliability for IWB and Its Dimensions

Main Variable	Cronbach's Alpha	Subdimensions of IWB	Cronbach's Alpha
Innovative Work Behavior (Overall)	0.91	Idea Generation	0.80
		Idea Promotion	0.77
		Idea Implementation	0.82

4. Descriptive Analysis of Innovative Work Behavior and Its Dimensions

The descriptive analysis was conducted to assess the perceived level of **Innovative Work Behavior (IWB)** and its three dimensions from the perspective of faculty members. The analysis is based on the respondents' answers to nine items, each measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

To interpret the means, the Likert scale was divided into five equal intervals by calculating the range (5–1 = 4) and dividing it by the number of categories (5), resulting in a class width of **0.80**. The classification of interpretation levels is presented below:

Table 6. Interpretation of Likert Scale Means

Score Range	1.00–1.80	1.81–2.60	2.61–3.40	3.41–4.20	4.21–5.00
Interpretation	Very Low	Low	Moderate	High	Very High

The results in Table 7 showed that the **overall mean** of IWB across all items was **3.96**, indicating a high level of perceived innovative behavior among faculty. The **standard deviation** was **0.808**, reflecting a moderate dispersion of responses and relatively consistent views among participants.

The **highest-rated item** was "They provide new ideas for difficult work problems" (mean = 4.08), while the **lowest-rated item** was "They seek approval for creative ideas" (mean = 3.89). Both items still fall within the "High" level range, indicating positive engagement with innovative behavior dimensions overall.

Table 7. Descriptive Statistics of Innovative Work Behavior Items

Item	Dimension	Mean	Std. Dev.	Level	Relative Importance %	Rank
They provide new ideas for difficult work problems.	Idea Generation	4.08	0.760	High	82%	1
They look for new methods or work techniques.		3.99	0.799	High	80%	3
They contribute to generating radical solutions to problems.		3.30	0.843	Moderate	79%	7
They mobilize support for creative ideas.	Idea Promotion	3.97	0.800	High	79%	4
They seek approval for creative ideas.		3.89	0.802	High	78%	9
They make their colleagues enthusiastic about new		3.90	0.790	High	78%	8

ideas.						
They strive to turn new ideas into useful applications.	Idea Implementation	3.97	0.848	High	79%	5
They make serious efforts to introduce creative ideas into the workplace.		3.30	0.809	Moderate	79%	6
They value the usefulness of creative ideas.		4.01	0.821	High	80%	2
Overall IWB Mean		**3.96**	**0.808**	**High**	**79%**	—

The results of the descriptive analysis indicate that all three dimensions of **Innovative Work Behavior (IWB)**—namely, **Idea Generation**, **Idea Promotion**, and **Idea Implementation**—are perceived by faculty members at a **high level of availability and practice** within the academic environment. Among these, the dimensions of **Idea Generation** and **Idea Implementation** achieved the **highest mean scores**, suggesting that faculty members are particularly active in producing new ideas and transforming them into actionable practices.

These findings reflect the presence of a **supportive and innovation-oriented organizational climate**, where individuals feel encouraged to contribute creatively and implement novel solutions. The consistency of responses, as evidenced by relatively low standard deviations, also indicates a **shared perception** among respondents regarding the value and engagement in innovative behavior.

This high overall level of IWB underscores the relevance of examining how factors such as demographic diversity may further influence or enhance these behaviors within academic settings.

5. Hypotheses Testing

To evaluate the proposed theoretical framework, two main hypotheses were formulated and tested. The first hypothesis examines whether a statistically significant correlation exists between demographic diversity and innovative work behavior (IWB), while the second explores whether demographic diversity exerts a predictive effect on IWB.

The hypotheses were tested using statistical techniques appropriate for the nature of the variables. Correlation analysis was conducted to determine the strength and direction of the relationships between the dimensions of demographic diversity and those of IWB, while regression analysis was used to assess the predictive power of demographic diversity on IWB.

5.1 Testing the First Hypothesis – Correlation (H1)

The first hypothesis posits that there is a statistically significant **correlation** between demographic diversity and innovative work behavior among faculty members. Pearson's **correlation coefficient (r)** was used to test the relationship between each dimension of demographic diversity (**age diversity, gender diversity, and tenure diversity**) and the overall IWB score.

The results of the analysis are presented in the table 8 below:

Table 8. Pearson Correlation Coefficients Between Demographic Diversity and Innovative Work Behavior

Demographic Diversity Dimension	Pearson's r	Significance (p-value)	Strength of Correlation
Age Diversity	0.552**	0.000	Strong
Gender Diversity	0.543**	0.000	Strong
Tenure Diversity	0.578**	0.000	Strong
Note: ** , **p < 0.01**, correlation is significant at the 0.01 level (2-tailed)			

The analysis reveals that all three dimensions of demographic diversity—**age, gender, and tenure**—have a **positive and statistically significant correlation** with innovative work behavior. The strength of the correlation in all cases exceeds **0.50**, indicating **strong relationships** based on Cohen's (1988) criteria for correlation effect sizes.

These findings support the first hypothesis (H1) and suggest that increased levels of diversity in faculty composition are associated with higher levels of innovation-related behavior within academic settings.

5.2 Testing the Second Hypothesis – Effect (H2)

The second hypothesis addresses the **direct effect** of demographic diversity on innovative work behavior (IWB). Specifically, it proposes that faculty members' diversity in terms of age, gender, and tenure has a statistically significant influence on their engagement in innovation-related behaviors.

To test this hypothesis, **simple linear regression analysis** was employed using SPSS v.23. Each dimension of demographic diversity was treated as an independent variable, and the overall IWB score was entered as the dependent variable. The statistical significance of each regression model was evaluated using the **F-test**, while the strength of prediction was determined through the **Beta coefficient (B)** and **coefficient of determination (R^2)**.

Following **Hair *et al.* (2010)**, an F-value with a p-value less than 0.01 confirms the model's statistical significance, while R^2 values indicate the proportion of variance in IWB explained by each demographic factor.

The results are presented in the table 9 below:

Table 9. Simple Linear Regression Estimates: Effect of Demographic Diversity on IWB

Demographic Dimension	B (Beta Coefficient)	R^2	F-value	p-value (Sig.)
Age Diversity	0.552**	0.305	20.251	0.000
Gender Diversity	0.543**	0.295	19.521	0.000
Tenure Diversity	0.578**	0.334	15.736	0.000
Note: ** , **p < 0.01**, correlation is significant at the 0.01 level (2-tailed)				

These results provide robust support for **Hypothesis 2 (H2)**, confirming that all three dimensions of demographic diversity—**age, gender, and tenure**—have a **positive and statistically significant effect** on innovative work behavior.

This finding aligns with prior theoretical and empirical research. For instance, **Horwitz and Horwitz (2007)** argue that demographic diversity enhances team performance by increasing access to a variety of perspectives and experiences. Similarly, **Garnero and Rycx (2014)** emphasize that diversity can improve problem-solving and productivity by broadening the informational base within workgroups.

Specifically, **tenure diversity** demonstrated the strongest predictive power ($R^2 = 0.334$), suggesting that differences in work experience may provide teams with both strategic insights and creative input. However, the positive effects observed across all three dimensions highlight the broader value of inclusive faculty composition.

Moreover, from a behavioral standpoint, **Bawuro *et al.* (2019)** suggest that intrinsic organizational factors—such as employee diversity—can directly enhance IWB by stimulating cognitive variety and social learning.

In methodological terms, the model's F-values and R^2 coefficients meet the statistical thresholds recommended by **Hair *et al.* (2010)**, affirming both the **significance and practical relevance** of the findings.

The practical analysis presented in this study demonstrates a high level of methodological rigor and empirical coherence. Through a series of statistical tests—ranging from confirmatory factor analysis (CFA) and structural reliability assessments to descriptive statistics and inferential hypothesis testing—the measurement and analytical framework of the research was validated successfully.

The results confirm that the **Innovative Work Behavior (IWB)** scale possesses a solid **factor structure**, strong **internal consistency**, and clear **interpretability** across its three dimensions: idea generation, idea promotion, and idea implementation. Descriptive findings revealed that faculty members exhibit a high level of engagement in IWB across all dimensions, indicating a favorable climate for innovation in the academic setting studied.

Furthermore, the hypothesis testing phase provided compelling evidence that **demographic diversity**—across age, gender, and tenure—has both a **significant correlation with**, and a **direct positive effect on**, innovative behavior among university faculty members. These findings are supported both statistically and theoretically, reinforcing the relevance of diversity as a driver of innovation within academic institutions.

Taken together, the practical results lend strong support to the study's conceptual model and provide a sound empirical foundation for drawing meaningful conclusions and offering actionable recommendations.

Conclusions

Based on the findings of the theoretical and empirical analyses conducted in this study, the following conclusions can be drawn:

1. Faculty members at Al-Qadisiyah University reported **a high level of engagement in innovative work behavior**, indicating a positive institutional climate that supports creativity and idea implementation in academic contexts.
2. There is a **statistically significant and strong correlation** between demographic diversity (age, gender, tenure) and innovative work behavior among faculty members, supporting the first hypothesis (H1).
3. Each dimension of demographic diversity also has a **positive and statistically significant predictive effect** on IWB, confirming the second hypothesis (H2). Notably, tenure diversity showed the strongest predictive power.
4. The study's results reinforce theoretical perspectives suggesting that diversity—when effectively managed—can serve as a catalyst for enhanced innovation, knowledge sharing, and performance in higher education institutions.
5. These findings provide empirical support for integrating diversity management strategies into academic development plans, particularly in contexts with increasing generational and gender-based variation.

Recommendations

In light of the study's findings and conclusions, the following recommendations are proposed to enhance the role of demographic diversity in fostering innovative work behavior within the context of higher education, particularly at Al-Qadisiyah University.

- **The University Presidency** should adopt a structured diversity policy aligned with national directives from the Iraqi Ministry of Higher Education and Scientific Research. This policy should focus on integrating age, gender, and tenure diversity into team formation, academic leadership, and collaborative projects.
- **The Department of Scientific Affairs and Graduate Studies** is encouraged to incorporate training modules on innovation and diversity management within the university's ongoing academic development programs.

- **Colleges and departments at Al-Qadisiyah University** should establish inter-generational research teams and committees that promote cross-disciplinary and demographically diverse collaboration, especially in research centers and quality assurance units.
- **The Division of Continuing Education and Development Centers** should offer periodic workshops on innovative work behavior (IWB), tailored to reflect the sociocultural and administrative realities of the Iraqi academic environment.
- **Human Resources Units** are advised to develop inclusive recruitment and promotion criteria that reward innovation and support gender equity in academic and administrative leadership positions, in accordance with national strategies for gender empowerment.
- **University innovation offices and scientific journals** should actively highlight and support innovation efforts from diverse faculty groups, especially in initiatives involving community engagement, digital education, and applied research.
- **The Ministry of Higher Education and Scientific Research** is encouraged to provide regulatory incentives and policy frameworks that integrate diversity and innovation metrics into university accreditation and ranking processes.

Limitations of the Study

While this study offers valuable insights into the relationship between demographic diversity and innovative work behavior in the academic context, several limitations should be acknowledged:

- **Sampling Scope**: The study was limited to faculty members at Al-Qadisiyah University. As a result, the findings may not be generalizable to other universities in Iraq or in different cultural or institutional contexts.
- **Cross-Sectional Design**: The research employed a cross-sectional approach, capturing perceptions at a single point in time. This limits the ability to infer causal relationships or observe changes in behavior over time.
- **Non-Probability Sampling**: A purposive sampling technique was used, which, while appropriate for exploratory research, may introduce selection bias and limit the statistical generalizability of the results.
- **Self-Reported Data**: All data were collected via self-report questionnaires, which may be subject to common method bias, social desirability bias, or subjective interpretation by respondents.
- **Cultural and Organizational Factors**: The study did not explicitly control for cultural variables, leadership style, or organizational climate, which may moderate the relationship between diversity and innovative behavior.

Suggestions for Future Research

To build upon the findings of this study and address its limitations, future research may consider the following directions:

1. **Expand the geographical scope** by including multiple universities across different Iraqi provinces or comparing public and private institutions to enhance the generalizability of results.
2. **Employ a longitudinal design** to examine how demographic diversity influences innovative behavior over time, allowing for stronger causal inferences and the detection of dynamic changes.
3. **Incorporate qualitative methods** such as interviews or focus groups to complement quantitative findings and provide deeper insights into how faculty members perceive and experience diversity and innovation.
4. **Explore moderating and mediating variables** such as organizational culture, leadership style, psychological safety, or institutional support systems that may affect the relationship between diversity and IWB.
5. **Use probability sampling techniques** in larger-scale studies to increase the representativeness and statistical robustness of the findings.
6. **Examine the role of disciplinary differences** by comparing faculties of sciences, humanities, and professional studies, as diversity effects may vary across academic fields.

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Appendix (Study Questionnaire)

Section 1: General Instructions

Please read each statement carefully and indicate your level of agreement using the scale provided. All responses will remain strictly confidential and will be used for research purposes only.

Section A – Demographic Diversity Indicators

(*These items are based on objective responses for entropy/variance calculation*)

1. What is your age?

☐ Less than 30 ☐ 30–39 ☐ 40–49 ☐ 50 and above

2. What is your gender?

☐ Male ☐ Female

3. What is the number of years you have worked at the university?

☐ Less than 5 years ☐ 5–10 years ☐ 11–15 years ☐ More than 15 years

Note: These responses will be converted into categorical indices for analysis purposes.

Section B – Innovative Work Behavior Scale (Janssen, 2000)

Please indicate the extent to which you agree or disagree with each of the following statements related to your work behavior. Use the scale below:

| **Scale:** | 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree |

Dimension 1: Idea Generation

- They provide new ideas for difficult work problems.
- They look for new methods or work techniques.
- They contribute to generating radical solutions to problems.

Dimension 2: Idea Promotion

- They mobilize support for creative ideas.
- They seek approval for creative ideas.
- They make their colleagues enthusiastic about new ideas.

Dimension 3: Idea Implementation

- They strive to turn new ideas into useful applications.
- They make serious efforts to introduce creative ideas into the workplace.
- They value the usefulness of creative ideas.