

# The Role of Human Capital in Fostering Organizational Ambidexterity: A Study of IT Firms in Pakistan

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## Abstract

*This research study addresses a crucial lacuna in understanding the role of human capital in fostering innovation and organizational adaptability within IT-based organizations in Pakistan. Despite its considerable importance, the literature must thoroughly examine the precise procedures by which human capital promotes organizational ambidexterity. This study intends to bridge this gap and provide significant insights for organizations aiming to improve their competitiveness in the rapidly evolving IT market by investigating the relationship between human capital and organizational ambidexterity through the mediating role of innovative work behavior. Positivism as a research philosophy is utilized, whereas quantitative research design was implemented to conduct this study. A cross-sectional survey was implemented to measure the causal relationship between variables; for this, two questionnaires were designed, i.e., one for subordinates and the other for their respective supervisors, to collect data from 564 supervisor-subordinate dyadic samples of Pakistani IT firms. The findings highlight the pivotal role of innovative work behavior between human capital and organizational ambidexterity, underscoring its critical importance in ensuring the organization's long-term sustainability and success.*

**Keywords:** Human Capital, Innovative Work Behavior, Organizational Ambidexterity.

## Introduction

While there is considerable agreement about the influence of human capital on firm competitiveness across sectors, certain scholars believe that its impacts may differ depending on the industrial context (Donate et al., 2016; Kianto et al., 2017; Youndt & Snell, 2004). In recent years, there has been a considerable increase in human capital research, which utilizes a variety of analytical approaches within varied contextual frameworks (Choudhary et al., 2020; Sokolov & Zavyalova, 2020). Several studies (Calabrò et al., 2021; Fedyk & Hodson, 2023; Gerhart & Feng, 2021; Hamilton & Sodeman, 2020; Zane, 2023) have emphasized the importance of human capital in knowledge-intensive and advanced technology areas. Human capital is vital to innovation and economic growth and can be a source of sustained competitive advantage. This is evident in the emergence of the knowledge economy (Yaseen et al., 2016). Although assessing human capital as an important intangible resource can be difficult, its intrinsic value cannot be disputed. Notably, most studies on the relationship between firm performance and human capital have been conducted in a commercial context. Although some academics have started to look at how human capital

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affects knowledge-intensive businesses like information technology (IT) companies, their contributions to the literature on human capital have been minimal (Andersson et al., 2021; Fedyk & Hodson, 2023; Heslina & Syahrini, 2021). These organizations operate in a dynamic environment where innovation is essential to success due to changing needs and cutting-edge technical breakthroughs. Workers at these firms must be highly creative to develop original ideas. Similarly, attaining development and sustainability depends critically on organizational ambidexterity. Therefore, this research examines the relationship between organizational ambidexterity and human capital regarding workers' innovative work behavior in Pakistani IT-based organizations. The IT sector in Pakistan was chosen since it is one of the knowledge-intensive industries and is well-known for its development trajectory driven by innovation (Khan et al., 2014; Shahzad et al., 2017; Waheed et al., 2019).

## Literature Review

### Human Capital

Human capital encompasses employees' collective capabilities and expertise, constituting a reservoir of knowledge distinct from the organization's tangible assets (Hsu & Fang, 2009). Bontis (2001) elaborates on this concept, characterizing human capital as the cumulative knowledge repository represented by an organization's workforce. Choudhary et al. (2020) further underscore the significance of human capital, positioning it as a fundamental component of intellectual assets and a primary driver of firms' competitive advantage.

Human capital encompasses the tacit knowledge, skills, and experiences employees possess (Choudhary et al., 2020). This reservoir of knowledge is not limited to explicit or codified information but extends to the nuanced insights and expertise that individuals bring to the organization. Furthermore, the concept of human capital, sometimes called talent capital, encompasses innate abilities, intelligence, creativity, and talent (Yaseen et al., 2016). It is the cornerstone of an organization's intellectual capacity, innovation, and inventive prowess (Ramadan et al., 2017).

Expanding upon this understanding, human capital emerges as the quintessential element underpinning organizational success, driving innovation, and fostering a culture of continuous improvement. Its intangible nature renders it distinct from traditional forms of capital, yet its impact on organizational performance is undeniable. Therefore, recognizing and nurturing human capital becomes imperative for organizations seeking a competitive edge in today's knowledge-driven economy.

### Innovative Work Behavior

Innovative work behavior denotes the deliberate generation, dissemination, and application of novel ideas within a work environment to enhance individual, group, or organizational performance (Janssen, 2000). This phenomenon, characterized by employees' propensity to conceive and implement innovative solutions, has garnered considerable attention in academic discourse. Scholars have recognized it as crucial for organizations striving to cultivate a sustainable competitive advantage (Farrukh et al., 2022). However, exploring innovative work behavior's implications reveals a complex interplay between intrinsic motivation, costs, and employee benefits. Despite its recognized significance, the psychological mechanisms underlying various facets of workers' innovative behavior still need to be more adequately understood (Singh et al., 2021; Zhang et al., 2022).

A growing body of research underscores the pivotal role of innovative work behavior in driving organizational innovation and, consequently, fostering success (Singh et al., 2021; Thneibat & Sweis, 2022). However, despite its acknowledged importance, innovative work behavior remains enigmatic, with scholars engaging in ongoing debates regarding its determinants and influencing factors. Therefore, while its significance for organizational prosperity is widely acknowledged, the intricacies of its antecedents and mechanisms continue to elude full comprehension within the scholarly community.

### **Organizational Ambidexterity**

Organizational ambidexterity is the simultaneous pursuit of maximizing efficiency in existing business operations while exploring new business opportunities, even amidst market and technological shifts (O'Reilly & Tushman, 2013). This capability, enabling businesses to engage in exploitation and exploration, is associated with establishing competitive advantages, boosting sales, and ensuring long-term firm viability (Chakma et al., 2021; Gürlek, 2021). It involves researching long-term expansion while utilizing contemporary business strategies to optimize revenues. Therefore, at the core of ambidexterity lies the skill to balance inherently different activities for exploitation, characterized by attributes like "refinement, choice, production, efficiency, selection, implementation, execution," and exploration, encompassing "search, variation, risk-taking, experimentation, play, flexibility, discovery, innovation" (March 1991). However, due to their conflicting nature, exploration and exploitation somewhat hinder each other (Clauss et al., 2021).

Overemphasis on current competencies can lead to a success trap, wherein organizational inertia prevents adaptation to changing environmental conditions, resulting in subpar performance outcomes. Conversely, prioritizing exploratory innovation activities can lead to a failure trap (March 1991). Organizational ambidexterity fosters technological innovation, competitive advantages, and firm survival amidst environmental turbulence. Consequently, ambidextrous firms can simultaneously execute radical (exploration) and gradual (exploitation) reforms (Kassotaki, 2022).

### **Theoretical Framework**

A theoretical framework that highlights the vital role internal resources play in defining an organization's competitive advantage and overall performance is provided by the resource-based view (RBV) (Barney et al., 2001). According to RBV, human capital—that is, the collective knowledge, skills, and talents of workers—emerges as a crucial internal resource influencing organizational outcomes within the parameters of this research. RBV states that organizations may gain a competitive edge by efficiently utilizing their unique and valuable resources, such as human capital, to stimulate innovation and adaptability (Barney et al., 2001; Kianto et al., 2017; Zhang et al., 2021). Organizations that embrace RBV understand the strategic importance of investing in human capital development to create an atmosphere that supports innovative work behaviors and organizational ambidexterity. This strategic emphasis eventually improves their ability to compete and guarantees long-term survival in dynamic market conditions.

### **Human Capital and Innovative Work Behavior**

Before introducing the hypothesis, it is imperative to establish the theoretical underpinnings upon which it is constructed. The term "human capital," commonly used in organizational literature, refers to a collection of the knowledge, abilities, and experiences that the members of an

organization possess. Extensive research has consistently underscored the significant role of human capital in shaping organizational success and performance outcomes. Additionally, innovative work behavior is characterized by generating and implementing novel ideas within the workplace and is identified as a critical determinant of organizational innovation and competitiveness. Drawing from this theoretical framework, the hypothesis suggests that, in organizational contexts, a positive association exists between human capital and innovative work behavior (Choudhary et al., 2020; Kianto et al., 2017). This proposition suggests that employees with heightened levels of human capital, manifested through enriched knowledge, skills, and experiential backgrounds, will likely demonstrate a heightened propensity for engaging in innovative work behaviors. This assertion is rooted in the understanding that human capital is the foundation for fostering creativity and proficient problem-solving capabilities, thereby facilitating the generation and effective implementation of innovative ideas. Consequently, it is anticipated that organizations dedicating efforts to cultivate and enhance the human capital of their workforce will observe an increase in both the frequency and quality of innovative work behaviors exhibited by their employees.

*H1: Human capital positively influences employees' innovative work behavior.*

### **Innovative work behavior and organizational ambidexterity**

Innovative work behavior cultivates an environment of creativity and experimentation within the organization, encouraging employees to explore unconventional methods and challenge conventional practices. This inclination towards experimentation corresponds with the exploratory dimension of organizational ambidexterity, empowering the organization to recognize and seize emerging opportunities. Furthermore, innovative work behavior enhances employees' adaptability and agility, which is crucial for effectively managing exploitation and exploration endeavors amidst evolving market conditions and technological advancements. Moreover, innovative work behavior facilitates the generation and dissemination of knowledge within the organization, fostering organizational learning and enabling the effective utilization of existing resources while pursuing novel avenues. Organizations that promote a culture of innovative work behavior among their employees are therefore considered to attain and maintain organizational ambidexterity more successfully, resulting in long-term success and a competitive edge (Liu et al., 2019). Therefore, we hypothesize that.

*H2: Employees' innovative work behavior positively influences organizational ambidexterity.*

### **Human capital and organizational ambidexterity: The mediating role of innovative work behavior**

A positive relationship exists between human capital levels, organizational ambidexterity, and innovative work behavior. Particularly, there is an association between human capital and higher levels of creative work behavior—the employees' proactive generation and implementation of novel ideas and solutions. The relationship between organizational ambidexterity and human capital is thus expected to be mediated by this behavior. Innovative work behavior enhances an organization's ability to utilize its resources while exploring new ones, which increases organizational ambidexterity.

It is, therefore, hypothesized that innovative work behavior mediates the positive relationship between organizational ambidexterity and human capital, thus enhancing the latter's capacity to flourish in demanding and dynamic environments in the long term.

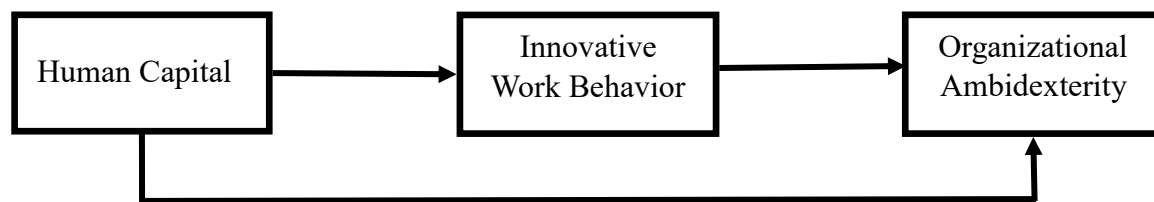
*H3: Human capital positively influences organizational ambidexterity through the mediating role of employees' innovative work behavior.*

### Human Capital and Organizational Ambidexterity

The total skills, knowledge, and competencies that members of an organization possess are known as their human capital, which is essential to the development of organizational ambidexterity. A varied workforce comprising a broad range of skills and competencies enables organizations to strike an efficient balance between the utilization of current resources and the pursuit of new opportunities. The diverse expertise among employees catalyzes innovation, adaptability, and flexibility, which are deemed essential for navigating the complexities of dynamic market conditions. Moreover, fostering a culture that prioritizes continuous learning and encourages experimentation further enhances the organizational capacity for ambidexterity (Liu et al., 2019; Zhang et al., 2022). Organizations may use the potential of human capital to achieve and sustain ambidextrous performance and maintain competitiveness in a constantly evolving business landscape by making strategic investments in people development and putting effective management strategies in place.

*H4: Human Capital positively influences organizational ambidexterity.*

**Figure 1: Research model**



### Methodology

Data collection for this study involved the utilization of a survey instrument. We used positivist research philosophy and quantitative research design to systematically observe, measure, and analyze the phenomenon under investigation, prioritizing the causal relationship among human capital, innovative work behavior, and organizational ambidexterity. Purposive sampling was used to collect data from 564 respondents from IT firms operating in Pakistan. For this purpose, two questionnaires were designed, one for subordinates and the other for their supervisors. Initially, we requested that the subordinates complete the questionnaire regarding human capital measurement. Subsequently, we approached the supervisors of the subordinates who had participated in the research and requested that they answer survey inquiries concerning their organizational ambidexterity and innovative work behavior. Both subordinates and supervisors completed the survey questionnaires at distinct times and locations, with the supervisors being conscious of the identities of their subordinates. The participants were assured that their responses would be treated with the utmost privacy and confidentiality (Tepper et al., 2011).

A cross-sectional design was adopted, and data was collected from supervisors and their subordinates to minimize the common method bias (Singh et al., 2021). Control variables, on the other hand, were initially obtained from survey respondents but were subsequently cross-verified using secondary sources of information.

## Measurement

The measures utilized in this study were derived from established multi-item scales found in previous research. The measure for human capital construct was adopted (Bontis, 1998). Those for employees' innovative work behavior and organizational ambidexterity were sourced from Janssen (2003) and Jansen et al. (2006). All research constructs were assessed using a five-point Likert scale. Human capital comprised five items, whereas employee's innovative work behavior and organizational ambidexterity consisted of 9 and 12 items, respectively.

## Data Analysis

Factor analysis is a crucial step in structural equational modeling (SEM), and it decreases the number of factors from different variables under study. There are two basic types of factor analysis: exploratory factor analysis and confirmatory factor analysis. The factor loadings, composite, reliability, and Cronbach's alpha values greater than 0.70 are mentioned in Table 1.

### Mean, Standard Deviation, and Cronbach's Alpha

The mean, standard deviation, and Cronbach's alpha of the research construct are utilized to assess the level of response from the targeted population toward the measure's components and the degree of interrelatedness and consistency among the scale items (Sekaran, 2003). In order to assess the response of the specific sample to the items related to human capital (HC), innovative work behavior (IWB), and organizational ambidexterity (OA) scales. The findings in Table 2 demonstrated that the participants observed a high level of internality regarding HC, IWB, and OA metrics.

**Table 1: Mean, standard deviation and Cronbach's alpha**

Variables	Mean	Std. Deviation	Cronbach's alpha
HC	2.59	1.07	0.90
IWB	2.60	1.01	0.94
OA	3.26	1.07	0.96

**Table 2: Factor loadings, AVE, and composite reliability**

Variables	Items	Factor Loading	AVE	Composite Reliability
HC	HC1	0.75	0.61	0.89
	HC2	0.79		
	HC3	0.76		
	HC4	0.79		
	HC5	0.83		
IWB	IWB1	0.74	0.62	0.94
	IWB2	0.73		
	IWB3	0.71		
	IWB4	0.77		
	IWB5	0.81		
	IWB6	0.78		
	IWB7	0.78		
	IWB8	0.93		
	IWB9	0.87		

OA	OA1	0.81	0.64	0.95
	OA2	0.79		
	OA3	0.77		
	OA4	0.79		
	OA5	0.78		
	OA6	0.82		
	OA7	0.85		
	OA8	0.88		
	OA9	0.92		
	OA10	0.79		
	OA11	0.77		
	OA12	0.83		

### Confirmatory Factor Analysis

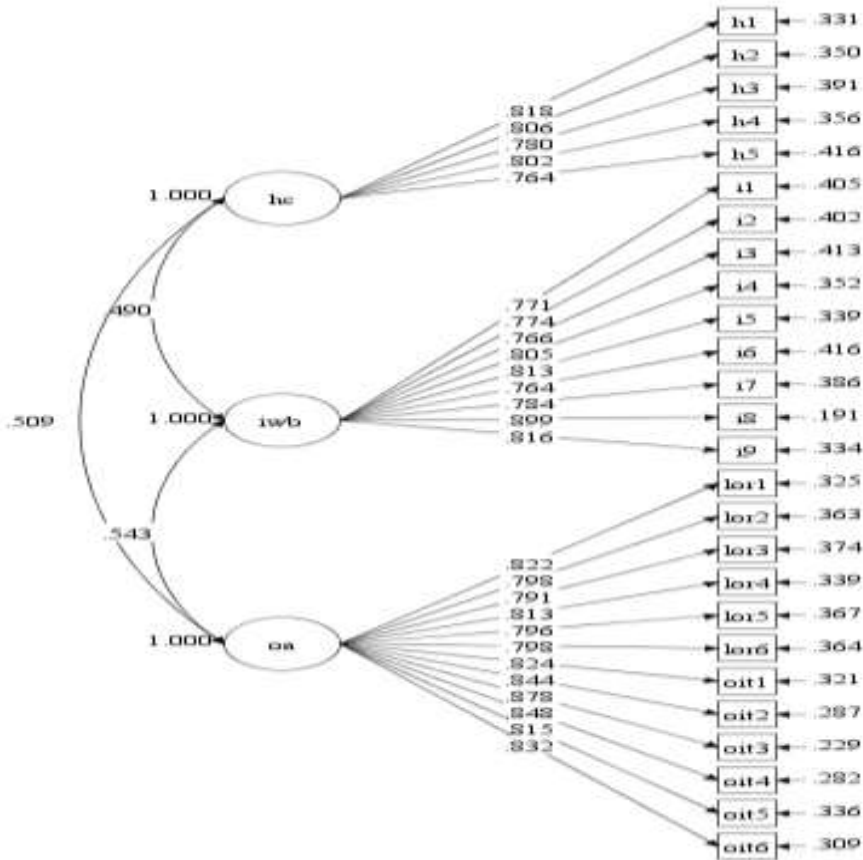
Since this study incorporated the existing measures that were established in the western setting, it was required to test these measures in the current context of the investigation. In order to assess the convergent validity, discriminant validity, and reliability of the variables under investigation, CFA was used in this study. SPSS and Mplus were utilized for the analysis. Initially, a single factor analysis was conducted, wherein all items were loaded onto a single factor. This resulted in a poor fit with the data ( $\chi^2 = 4103.723$ ;  $df = 299$ ;  $\chi^2/df = 13.72$ ; standardized root mean squared residual [SRMR] = 0.22; confirmatory fit index [CFI] = 0.49; Tucker-Lewis index [TLI] = 0.45; root mean square error of approximation [RMSEA] = 0.18), as shown in table 3.

With ( $\chi^2 = 969.437$ ,  $df = 296$ ,  $\chi^2/df = 3.28$ , standardized root mean squared residual [SRMR] = 0.03, confirmatory fit index [CFI] = 0.94, Tucker-Lewis index [TLI] = 0.94, and root mean square error of approximation [RMSEA] = 0.07, table 3, the three-factor CFA demonstrated a strong fit with the data. The three-factor model outperformed the single-factor CFA model, according to a chi-square difference test ( $p < 0.001$ ).

**Table 3: Model fit indices of one factor model confirmatory factor analysis**

	Model fit Index	Threshold Value	Actual Value	Result
One-factor CFA	$\chi^2/df$	2.53-5	13.72	Not Good Fit
	SRMR	0.03-0.08	0.22	Not Good Fit
	CFI	$\geq 0.9$	0.49	Not Good Fit
	TLI	$\geq 0.9$	0.45	Not Good Fit
	RMSEA	$\leq 0.08$	0.18	Not Good Fit
Three-factor CFA	$\chi^2/df$	2-5	3.28	Good Fit
	SRMR	0.03-0.08	0.04	Good Fit
	CFI	$\geq 0.9$	0.94	Good Fit
	TLI	$\geq 0.9$	0.94S	Good Fit
	RMSEA	$\leq 0.08$	0.06	Good Fit

*Note:* All variables were merged

**Figure 2: Confirmatory Factor Analysis**

The three-factor model's results also showed that each variable's itemized standard loadings are high and exceed the suggested threshold of 0.50. The average variance extracted (AVE) of each variable was determined by the researcher utilizing the method established by Fornell & Larcker (1981) in order to assess the convergent validity.

### Correlations and Discriminant Validity

In a research project, the purpose of using correlation is to evaluate the level of relationship between two variables. It might have either a negative or positive value. The presence of a positive correlation indicates that constructs are positively related to each other, whereas a negative correlation indicates that constructs are negatively related to each other. The correlation analysis yields insights into the degree of association between the studied constructs, specifically indicating whether the relationship is linear or not (Field, 2009; Sekaran, 2003). The range of the correlation coefficient is -1 to +1. A positive correlation is implied by a number larger than zero, and a negative correlation is shown by a value smaller than zero. A higher value indicates a better correlation between the variables, whereas a lower value indicates a weaker link. The correlation between the studied variables is displayed in table 4. The analysis indicates a substantial connection among the research variables, with a p-value of less than 0.01.

The correlation of HC with IWB ( $r = 0.49$ ,  $p < 0.01$ ) and OA ( $r = 0.47$ ,  $p < 0.01$ ), is positive and significant. Similarly, the correlation of IWB with OA ( $r = 0.23$ ,  $p < 0.01$ ) is positive and



significant. Most importantly the direction of relationship of all study variables are as per the direction of our study hypothesis.

Discriminant validity refers to the concept that in a study, it is important to identify and avoid using instruments that are similar in character and inter-related, as this might lead to complications in the data. This is based on the understanding that the connection between different constructs should be distinct. Discriminant validity is achieved when the correlation between components is less than 0.5 (Fornell & Larcker, 1981). If the numbers obtained through SPSS or produced by the AMOS validity test surpass the designated threshold of 0.5, it signifies substantial issues with the instrument used to get specific data. The inter-correlation data and the square root of the average variance extracted (AVE) were documented in Table 4. The results suggest that there are no concerns regarding the discriminant validity of the dataset. The data fulfils the necessary criteria for doing regression analysis, as all conditions have been met and the assumptions of regression analysis have been successfully verified.

**Table 4: Correlations and discriminant validity**

Variables	1	2	3
1. HC	(0.61)		
2. IWB	0.49**	(0.56)	
3. OA	0.47**	0.53**	(0.62)

*Note:* Discriminant validity is presented in parenthesis.

### Hypothesis Results

To estimate the directional hypothesis MPLUS statistical software was applied. The relational hypothesis results are presented in Table 5. This research hypothesized that HC positively affects IWB. The model fit indices (Chi-square = 253.37, df = 76, TLI = 0.96, CFI = 0.97, RMSEA = 0.07, SRMR = 0.03) prove the fitness of model. The result of the study proved the hypothesis 1 (b= 0.49, SE = 0.04, p < 0.001, LLCI = 0.42, ULCI = 0.56) as there is no zero value between upper and lower limit of confidence interval.

**Table 5: Hypotheses testing**

Hypothesis	Relationship	Estimate	SE	95% CI	Remarks
H1	HC → IWB	0.49***	0.04	(0.42, 0.56)	Supported H1
H2	IWB → OA	0.53 ***	0.03	(0.48, 0.61)	Supported H2
H3	HC → IWB → OA	0.19***	0.02	(0.14, 0.24)	Supported H3
H4	HC → OA	0.51***	0.03	(0.44, 0.58)	Supported H4

The hypothesis H2 is that IWB has a positive association with OA. The model fit indices (Chi-square = 768.88, df = 188, TLI = 0.94, CFI = 0.94, RMSEA = 0.07, SRMR = 0.03) prove the fitness of model. Hypothesis H2 was also proved statistically significant (b= 0.53, SE = 0.03, p < 0.001, LLCI = 0.48, ULCI = 0.61) that IWB has positive relationship with OA.

Furthermore, in hypothesis H3, the researcher hypothesized HC has a positive association with OA through mediation of IWB. The model fit indices (Chi-square = 969.43, df = 296, TLI = 0.94, CFI = 0.94, RMSEA = 0.07, SRMR = 0.04) prove the fitness of model. The statistical analysis proved the hypothesis 3 (b= 0.19, SE = 0.02, p < 0.001, LLCI = 0.14, ULCI = 0.24) that HC has positive indirect relationship with OA.

The hypothesis H4 is that HC has a positive association with OA. The model fit indices (Chi-square 535.82,  $df = 118$ , TLI = 0.94, CFI = 0.95, RMSEA = 0.07, SRMR = 0.03) prove the fitness of model. Hypothesis 4 was also proved statistically significant ( $b = 0.51$ ,  $SE = 0.03$ ,  $p < 0.001$ , LLCI = 0.44, ULCI = 0.58) that HC has positive relationship with OA.

## Discussions

The results of this study support the notion that organizational ambidexterity, innovative work behavior, and human capital are all related. The results support previous research by showing a strong positive association between human capital and innovative work behavior. This correlation emphasizes the critical role that employees' knowledge, abilities, and experience play in promoting innovative work behaviors. These findings highlight the need to put human capital development programs inside organizations to foster an innovative atmosphere.

Furthermore, the positive relationship that has been shown between innovative work behavior and organizational ambidexterity highlights the vital role that workers play in fostering company adaptability and competitiveness. Workers actively coming up with and putting new ideas into practice help the organization balance its exploration and exploitation efforts, improving its flexibility in changing environments (Liu et al., 2019).

Additionally, it is suggested that human capital is crucial to improving an organization's ability to simultaneously use its present resources and pursue new ones due to the direct and positive link between it and organizational ambidexterity (Zhang et al., 2022). Employers with highly trained and competent staff are better able to take advantage of new opportunities, adjust to changing market conditions, and maintain their competitive edge over time.

## Implications

The implications of these findings are multifaceted. Firstly, organizations are encouraged to prioritize investment in human capital development initiatives to cultivate a workforce capable of driving innovation and organizational ambidexterity. This might include offering training and growth opportunities, encouraging lifelong learning, and rewarding employees who share their expertise.

Secondly, organizations should recognize the significance of fostering a supportive environment that encourages and rewards innovative work behavior. To achieve this, it could be necessary to implement procedures and policies that encourage employees to try out novel ideas, offer tools and assistance for inventive initiatives, and foster a climate of adaptability.

Thirdly, organizations can leverage the insights from this study to inform their talent management strategies. By recruiting, retaining, and developing employees with diverse skills and experiences, organizations can enhance their capacity for innovation and adaptability, thereby gaining a competitive edge in the marketplace.

## Conclusion and Recommendations

This study's conclusion emphasizes the role of innovative work behavior and human capital in fostering organizational ambidexterity. Organizations may improve their capacity to balance exploration and exploitation operations, leading to sustainable success and competitive advantage in today's quickly changing business landscape, by investing in human capital development and cultivating an innovative culture.

In light of these results, it is recommended that organizations prioritize initiatives to develop and nurture their human capital, foster a culture of innovation, and promote employee engagement in

innovative work behaviors. Additionally, future research may explore the mechanisms through which human capital influences organizational ambidexterity and the role of other organizational factors in shaping innovation and adaptability.

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