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Standardizing Organizational Ambidexterity Scale

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Abstract
This paper introduces a new instrument for measuring organizational ambidexterity, capturing the simultaneous pursuit of exploration and exploitation. Addressing limitations of existing scales that often assess these dimensions separately or focus on single aspects, the present study develops a comprehensive measure incorporating multiple dimensions relevant to ambidexterity. Data were collected from 250 managerial personnel within Indian private sector organizations.
The scale development involved rigorous methodology, including literature review, expert evaluation, and pilot testing. Exploratory factor analysis identified three key factors underlying organizational ambidexterity: Organizational Competence, Knowledge Practices, and Strategic Orientation. Confirmatory factor analysis further validated this three-factor structure. The resulting 19-item scale demonstrates high internal consistency and satisfactory construct validity.
This new measure provides a valuable tool for researchers and practitioners seeking to assess and understand organizational ambidexterity, particularly within the Indian context. By offering a more holistic and integrated assessment, the scale facilitates a deeper understanding of how organizations can effectively balance exploration and exploitation to achieve sustainable competitive advantage.

Key Words: Organizational Ambidexterity, Internal Consistency Reliability, Exploratory and Confirmatory Factor Analysis

Introduction

Organizational Ambidexterity

Organizational ambidexterity has been likened to “flying the plane while rewiring it” (Judge & Blocker, 2008). It is defined by March (1991) as the ability of organizations to simultaneously explore new opportunities and exploit existing ones, a definition that remains widely accepted (Simsek, Heavey, Veiga & Souder, 2009). Tushman and O'Reilly (1996) used the metaphor of juggling to emphasize the need for companies to balance and trade-off between exploration and exploitation simultaneously.

Exploitation and exploration have been described as change routines (Beck, Brüderl, & Woywode, 2008), learning logics (He & Wong, 2004), types of innovation (Katila & Ahuja, 2002), or knowledge strategies (Bierly & Daly, 2007), all of which are crucial for organizational learning (He & Wong, 2004; Holmqvist, 2004; Kang & Snell, 2009; Katila & Ahuja, 2002; Swart

& Kinnie, 2007), team performance (Taylor & Greve, 2006), and strategic direction (Han, 2007). Exploration involves acquiring knowledge related to search, experimentation, innovation, radical change, and the creation of new products, processes, and services, while exploitation refers to knowledge aimed at continuous improvement, refinement, and incremental changes to existing products, processes, and services (Im & Rai, 2008; March, 1991, 1999).

Exploitation and exploration are also viewed as dynamic capabilities (Helfat, Finkelstein, Mitchell et al., 2007; Jansen, George, Van den Bosch, & Volberda, 2008, 2009; Judge & Blocker, 2008; O'Reilly & Tushman, 2007, 2008) rooted in the resource-based view of the firm (Barney, 1991; Wernerfelt, 1984). These dynamic capabilities refer to operational and strategic routines within firms that enable the use, integration, reconfiguration, and management of resources to adapt to or create changes in the market (Eisenhardt & Martin, 2000). By enhancing alignment between the firm's strategy and the evolving business environment, dynamic capabilities help companies generate innovative strategic value (Judge & Blocker, 2008).

Since organizational ambidexterity is defined as a company's capacity to concurrently manage complementary and interdependent but conflicting processes like exploration and exploitation, it has occasionally been viewed as a contradiction (Andriopoulos & Lewis, 2009; Smith & Lewis, 2011). Ambidexterity expands on Duncan's (1976) suggestion that companies should use "dual structures" that focus on alignment or adaptation differently to handle trade-offs between competing objectives. Since a firm's capacity to successfully compete over the long term rests on its ability to collaboratively pursue both exploration and exploitation, ambidexterity has been regarded as a critical driver of long-term performance (Raisch & Birkinshaw, 2008).

The definition of organizational ambidexterity has been a topic of discussion among academics studying organizations. The ability of an organization to simultaneously address two contradictory demands, such as alignment and adaptation (Birkinshaw & Gibson, 2004), evolutionary and revolutionary change (Tushman & O'Reilly, 1996), efficiency and flexibility (Adler, Goldoftas, & Levine, 1999), differentiation and low-cost strategy (Porter, 1996), global integration and local responsiveness (Doz, Bartlett, & Prahalad, 1981), zero-level capabilities and higher-order capabilities (Winter, 2003), and incremental and radical innovation (Benner & Tushman, 2003) are all examples of organizational ambidexterity.

Tushman and O'Reilly (1996) describe ambidexterity as the capability to pursue both incremental and disruptive innovation and change at the same time. Successfully managing this requires organizations to handle the inherent tensions between the two. Achieving a balance between exploration and exploitation is the ideal result, where the organization is proficient in both areas (Andriopoulos & Lewis, 2009).

Gibson and Birkinshaw (2004) suggest that the concept of organizational ambidexterity arose when companies started balancing the demands of today with the needs of the future. While these trade-offs can't be fully avoided, successful companies manage to reconcile them, becoming 'ambidextrous.' Raisch and Birkinshaw (2008) argue that organizational ambidexterity has become a new research focus in organizational theory. As defined by Duncan (1976) and Gibson and Birkinshaw (2004), it refers to a company's ability to execute its current strategy while simultaneously developing strategies for the future, which is shaped by the organizational context employees work within.

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Jansen, Van den Bosch, and Volberda (2005) defined organizational ambidexterity as the ability to pursue both exploratory and exploitative innovation simultaneously. Duncan (1976) highlighted the importance of structural arrangements to manage innovation effectively. March (1991), along with Levinthal and March (1993), emphasized that maintaining a balance between exploration and exploitation is beneficial for a firm's long-term success. The concept of ambidexterity is also reflected in the literature on dynamic capabilities, which advocates for integrating two distinct strategic logics—exploration and exploitation—within organizations (Ancona, Goodman, Lawrence, & Tushman, 2001; Eisenhardt & Martin, 2000).

Most scholars describe ambidexterity as the simultaneous balancing of competing processes such as exploratory and exploitative innovation, routine and non-routine tasks, alignment and adaptability in business units, as well as sustaining and disruptive innovations (Benner & Tushman, 2003; Gibson & Birkinshaw, 2004; Gupta, 2006; He & Wong, 2004; Jansen, Van den Bosch, & Volberda, 2006). Lubatkin and Simsek (2009) suggest that ambidexterity is the ability to pursue both exploration and exploitation with equal skill. While the idea that ambidexterity requires equal adeptness is plausible, it raises the question of whether organizations that successfully manage both exploration and exploitation always need to do so in equal measure. However, there is broad agreement that ambidexterity involves simultaneously managing these two activities.

Table representing Thematic Analysis Table: Organizational Ambidexterity Literature

Theme	Description	Key References/Examples
Definition & Metaphors	Ambidexterity is the ability to simultaneously explore new opportunities and exploit existing ones. Metaphors: "flying the plane while rewiring it", "juggling".	March (1991); Tushman & O'Reilly (1996); Judge & Blocker (2008)
Theoretical Foundations	Rooted in dynamic capabilities and resource-based view. Emphasizes operational and strategic routines for adaptation and innovation.	Eisenhardt & Martin (2000); Helfat et al. (2007); Barney (1991); Wernerfelt (1984)
Balancing Contradictory Demands	Focus on managing tensions between exploration (innovation, radical change) and exploitation (efficiency, incremental improvement). Seen as both complementary and conflicting.	Andriopoulos & Lewis (2009); Smith & Lewis (2011); Birkinshaw & Gibson (2004); Benner & Tushman (2003)
Dimensions of Ambidexterity	Includes knowledge practices, strategies, competence, innovation, competition, partnership, and orientation. These dimensions are often measured separately in existing scales.	He & Wong (2004); Lin et al. (2007); Gibson & Birkinshaw (2004)

Measurement Approaches	Previous scales often separate exploration and exploitation or focus on one dimension. The new scale integrates multiple dimensions and measures both simultaneously.	Present study; Gibson & Birkinshaw (2004); He & Wong (2004)
Structural Arrangements	Importance of dual structures and organizational context in managing ambidexterity. Structural and contextual solutions to balance alignment and adaptation.	Duncan (1976); Gibson & Birkinshaw (2004)
Practical Implications	Ambidexterity is critical for long-term performance, innovation, and strategic alignment in dynamic environments.	Raisch & Birkinshaw (2008); Tushman & O'Reilly (1996)
Methodological Rigor	Use of exploratory and confirmatory factor analysis to validate scales. Emphasis on reliability and construct validity.	Present study; Byrne (1989); Joreskog & Sorbom (1989)

Method

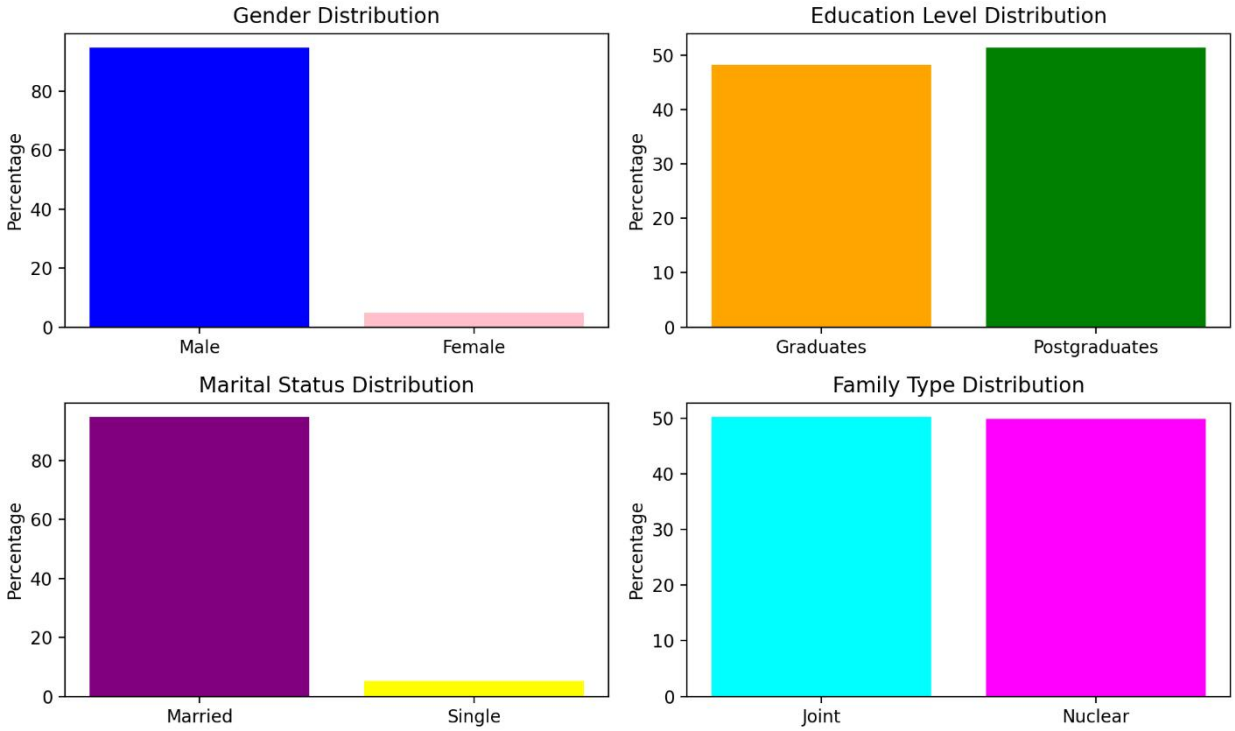
Objective: Many scales are available on organizational ambidexterity which studies exploration and exploitation separately i.e., separate questions are there for each of the dimensions and then the responses are combined together (eg, Gibson & Birkinshaw, 2004; He & Wong, 2004, etc). Secondly, In the scale available researchers have studied only one dimension each like for example, in the scale of He & Wong, 2004, have studied only Innovation (exploration & Exploitation); Lin et al. (2007) Strategies (exploration & Exploitation); Gibson and Birkinshaw, 2004, Adaptability & alignment etc.

The present construct tried to construct items of dimensions like knowledge practices, strategies, competence, innovation, competition, partnership, orientation together for one scale. Finally, the most important factor that this present scale takes into account is measuring the exploration & exploitation simultaneously, in other words, the items so framed would have the facets of both these dimension (for example; 'Our organization encourages simultaneous use of both old (based on experience) and newly acquired knowledge.'; 'Our organization focuses on the activities for promoting both long term and short term goals simultaneously.'; 'Our organization promotes creation of new partnerships as well as amplification of the existing ones.' Etc.)

Hence, the primary objective of this study is to develop and standardize a comprehensive scale for measuring organizational ambidexterity that simultaneously assesses both exploration and exploitation across multiple dimensions—including knowledge practices, strategies, competence, innovation, competition, partnership, and orientation—within Indian private sector organizations, and to establish the scale's reliability and validity through rigorous statistical analyses.

Sample: The present study was conducted on 250 managerial personnel of different private sector organizations of India. Convenience sampling method was used for the selection of the sample. The demographic characteristics of the sample. It shows that the majority of the

sample consisted of male respondents (94.8%) with a mean age of 42.29 while females were only (4.8%) with a mean age of 42.87. This table also indicates that 48.2% of the respondents were graduates while 51.4 % of respondents were post graduates and above. Also, 94.8% of the respondents were married while only 4.8% were unmarried. The family type of 50.2% of the sample was joint while 49.4% of the sample family type was nuclear. Finally, the table also shows that the mean tenure of respondents in the organization was found to be 9.75 years.
Based on occupation, employees working in some limited fields such as manufacturing and production areas of private sector organizations were selected. The attempt to get a heterogeneous sample was made in order to ensure wide variations examining in response so that reliability of the questionnaire is not artificially pruned because of restricted response variance.



Procedure:

Table representing the procedure phases for standardizing the Organizational Ambidexterity Scale

Phase	Objective/Activity	Details	Output/Outcome
Phase I: Item Generation	Generate initial item pool based on literature review	Extensive review of articles related to organizational ambidexterity, drawing from the work of Tushman and O'Reilly (1996), Gibson & Birkinshaw (2004), He and Wong's (2004), Hill and Birkinshaw (2006), Martini, Aloini, and Dulmin (2012) and others.	Initial pool of 30 statements

Phase II: Expert Review & Refinement	Evaluate and refine the item pool based on expert feedback	The initial 30 items were presented to a panel of three experts who assessed each item's suitability for inclusion. Based on their feedback, 23 statements were selected. A five-point Likert scale ranging from "To a very great extent" to "To no extent at all" was used for responses.	Refined pool of 23 statements with a 5-point Likert scale for responses
Phase III: Pilot Testing	Assess clarity and understandability of the scale items and instructions	The scale was administered to 50 employees with clear instructions in English. The primary goal was to assess the clarity and understandability of the items and instructions. Feedback was collected on any difficulties encountered during completion.	Finalized scale ready for administration to the main sample for development and validation
Phase IV: Main Study	Administer the refined scale to a larger sample and analyze the data	The final scale was administered to 250 managerial personnel from various private sector organizations in India, using convenience sampling. Data collected was subjected to exploratory and confirmatory factor analyses, along with reliability testing (Cronbach's alpha).	Standardized and validated Organizational Ambidexterity Scale with established reliability and validity

Results:

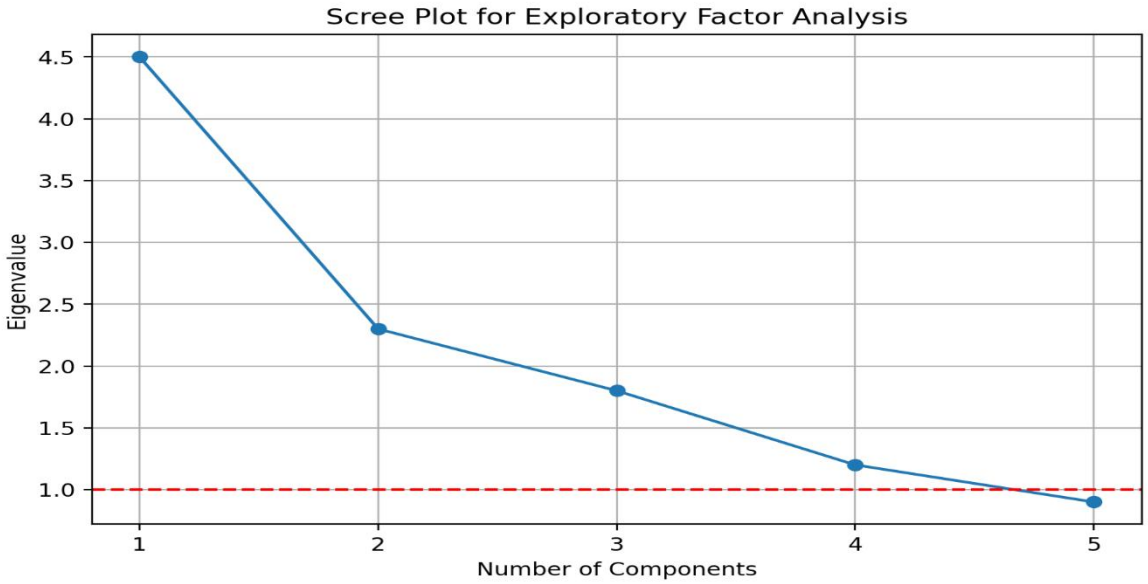
Table 1 shows a summary of exploratory factor analysis. It is seen that after exploratory factor analysis 3 components emerged. Also 3 items were deleted, namely, item 7, item 8 (as they showed cross loadings) and item 9 (did not load on any of the 3 components). Further, the result of exploratory factor analysis for the 19 items organizational ambidexterity questionnaire shows that total variance explained by all 19 items is 59.981%. The EigenValue for factor 1, factor 2 and factor 3 is 4.178, 3.626, and 3.592 respectively. The cut mark criterion for the factor loading was kept at 0.50. The sampling adequacy was checked through KMO statistics and the result of the KMO statistic was 0.940.

Table 1: Summary of Exploratory Factor analysis (factor loading, Eigenvalue, Explained Variance) for Organizational Ambidexterity Questionnaire.

Organizational Ambidexterity Items	Factor 1	Factor 2	Factor 3
OA1		0.657	
OA2		0.75	
OA3		0.723	
OA4		0.708	
OA5		0.706	
OA6			0.563

OA10			0.584
OA11			0.537
OA12			0.556
OA13	0.675		
OA14	0.636		
OA15	0.677		
OA16	0.644		
OA17	0.543		
OA18			0.789
OA19			0.76
OA20	0.520		
OA21	0.690		
OA22	0.618		
% of variance explained	21.991	19.083	18.907
Total % of variance explained		59.981	
EigenValues	4.178	3.626	3.592
Cronbach's Alpha	0.890	0.869	0.849

This plot shows the Eigenvalues for each component, helping to determine the number of factors to retain based on the Kaiser Criterion (the red dashed line).



Next, Confirmatory factor analysis was carried out since it is more appropriate way to cross validate the factor structure of a test (Byrne, 1989; Joreskog & Sorbom, 1989; Pedhazur & Schmelkin, 1991). Lisrel v8 was used for running CFA.

Table 2: Summary of Confirmatory Factor Analysis for Organizational Ambidexterity Questionnaire.

Goodness of fit statistics		Cut off
RMSEA	0.066	≤ 0.08
NFI	0.97	≥ 0.95
NNFI	0.98	≥ 0.95
CFI	0.98	≥ 0.95
SRMR	0.043	≤ 0.05 - 0.08

The results of confirmatory factor analysis (table 2) confirmed the factors extracted from the exploratory factor analysis. The goodness of fit cut off criteria was referred from 'Structural Equation Modeling: guidelines for determining model fit' by Hopper, Couglan and Mullen (2008).

To check the reliability of the final 19 item organizational ambidexterity scale cronbach's alpha was computed (table 3).

Table 4: Summary of the reliability analysis and corrected item-total correlation of 19 items organizational ambidexterity questionnaire

Items of Organizational Ambidexterity Questionnaire (OAQ)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation
OAQ item1	69.644	140.607	0.662	0.552
OAQ item2	69.688	139.934	0.651	0.555
OAQ item3	69.768	138.018	0.697	0.606
OAQ item4	69.676	139.28	0.649	0.549
OAQ item5	69.744	136.906	0.698	0.633
OAQ item6	69.668	139.7166	0.648	0.525
OAQ item10	69.676	140.276	0.639	0.48
OAQ item11	69.724	138.112	0.674	0.537
OAQ item12	69.792	140.84	0.606	0.444
OAQ item13	69.884	138.496	0.651	0.515
OAQ item14	69.892	139.132	0.690	0.546
OAQ item15	69.712	138.374	0.660	0.506
OAQ item16	69.616	140.896	0.609	0.432
OAQ item17	69.848	139.711	0.65	0.49
OAQ item18	69.808	140.742	0.642	0.541
OAQ item19	69.724	140.056	0.622	0.538
OAQ item20	69.76	138.263	0.695	0.599
OAQ item21	69.856	139.127	0.673	0.592
OAQ item22	69.752	138.556	0.713	0.571
Reliability Coefficient (α) for 19 items after deleting 3 items from questionnaire		0.943		

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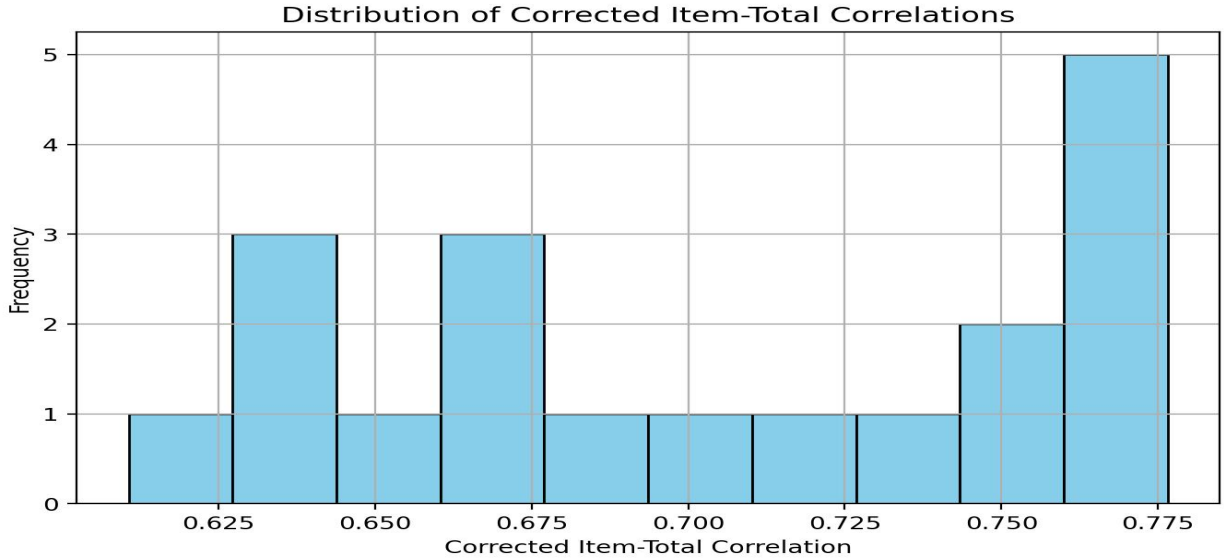
The results of the corrected item total correlation showed that the range of the item total correlation was from 0.606 to 0.713. The result of the reliability analysis showed that Cronbach's coefficient (α) was to be 0.943.

This histogram visualizes the distribution of the corrected item-total correlations, indicating the reliability of the items in the scale.



Therefore, the final organizational ambidexterity scale consisted of 19 items with 3 dimensions. The first constituted 8 items (10-14, 17, 18, and 19); the second dimension consisted of 5 items (1-5) and the third dimension had 6 items (6, 7, 8,9,15 and 16).

Discussion:

The primary aim of this study was to standardize and validate a new scale designed to measure organizational ambidexterity. The scale development process involved multiple phases, starting with an initial draft of 30 items that were refined to 23 based on expert feedback, followed by rigorous statistical analyses**.**

One of the critical steps in validating the scale was conducting exploratory factor analysis (EFA). EFA is instrumental in reducing data to a smaller set of summary variables and exploring the underlying theoretical structure of the phenomena (REF). The EFA results revealed a three-factor structure, leading to the retention of 19 items. As shown in Figure 1, the scree plot of Eigenvalues illustrates the variance explained by each factor. The Kaiser Criterion, represented by the red dashed line, suggests retaining factors with Eigenvalues above 1. This criterion supported the extraction of three factors, as each had Eigenvalues exceeding this threshold. These three factors collectively explained 59.981% of the total variance, underscoring their significance in capturing the construct of organizational ambidexterity. The KMO statistic of 0.940 indicated sampling adequacy, affirming the suitability of the data for factor analysis.

To further validate the factor structure identified through EFA, confirmatory factor analysis (CFA) was performed. CFA is a more rigorous method for cross-validating the factor structure of a test (Byrne, 1989; Joreskog & Sorbom, 1989; Pedhazur & Schmelkin, 1991). The CFA results (Table 2) confirmed the three-factor structure, providing robust evidence for the construct validity of the organizational ambidexterity scale. The goodness-of-fit indices met the

recommended cut-off criteria (Hopper, Couglan, & Mullen, 2008), indicating that the model adequately fits the data.

The reliability of the final 19-item scale was assessed using Cronbach's alpha. Figure 2 presents a histogram visualizing the distribution of corrected item-total correlations, offering insights into the reliability of individual items. The corrected item-total correlations ranged from 0.606 to 0.713 (Table 4), indicating strong item consistency. The overall Cronbach's alpha for the scale was 0.943, demonstrating excellent internal consistency. This high reliability coefficient suggests that the items cohesively measure the same underlying construct.

Based on the theoretical understanding of the items within each factor, the three factors were named:

1. Organizational Competence: This factor, consisting of 8 items (10-14, 17, 18, and 19), reflects the organization's proficiency in refining products and processes, emphasizing efficiency and risk-taking capacity.
2. Knowledge Practices: Comprising 5 items (1-5), this factor pertains to the organization's approach to knowledge management, encompassing individual skills, organizational practices, and knowledge-based assets.
3. Strategic Orientation: With 6 items (6, 7, 8, 9, 15, and 16), this factor captures the organization's focus on balancing short-term and long-term goals, reflecting its strategic alignment and adaptability.

In summary, the newly developed organizational ambidexterity scale demonstrates sound psychometric properties, including robust construct validity and high reliability. This scale offers a comprehensive measure of organizational ambidexterity, capturing multiple dimensions simultaneously. It can be a valuable tool for assessing and understanding organizational ambidexterity in the Indian private sector.

Implications

The development and validation of this organizational ambidexterity scale have several important implications for both research and practice.

Comprehensive Measurement: The scale offers a more comprehensive approach to measuring organizational ambidexterity by integrating multiple dimensions (knowledge practices, strategies, competence, innovation, competition, partnerships, and orientation) into a single instrument. This holistic approach contrasts with previous scales that often focus on only one or two dimensions, providing a richer and more nuanced assessment of ambidextrous capabilities.

Simultaneous Assessment: Unlike scales that measure exploration and exploitation separately, this scale assesses these dimensions simultaneously. This simultaneous approach is more aligned with the theoretical understanding of ambidexterity as the concurrent management of conflicting demands, offering a more realistic representation of organizational dynamics.

Contextual Validation: The validation of the scale within the Indian private sector contributes to the broader understanding of organizational ambidexterity in emerging markets. It provides a context-specific measure that accounts for unique organizational and environmental factors present in India.

Diagnostic Tool: The scale can serve as a diagnostic tool for organizations to assess their current level of ambidexterity. By identifying strengths and weaknesses across the three dimensions (organizational competence, knowledge practices, and strategic orientation), organizations can gain insights into areas that require improvement.

Strategic Decision-Making: The scale can inform strategic decision-making related to resource allocation, innovation initiatives, and organizational design. For example, if an organization

scores low on the knowledge practices dimension, it may need to invest in knowledge management systems and training programs to foster a more learning-oriented culture.
Performance Improvement: By implementing interventions based on the scale's assessment, organizations can enhance their ability to balance exploration and exploitation, leading to improved performance. Ambidextrous organizations are better equipped to adapt to changing environments, innovate effectively, and achieve sustainable competitive advantage.
Benchmarking: Organizations can use the scale to benchmark themselves against industry peers and identify best practices for managing ambidexterity. This benchmarking process can facilitate knowledge sharing and learning across organizations.
Leadership Development: The scale can be used to assess and develop leadership capabilities related to ambidexterity. Leaders who understand the importance of balancing exploration and exploitation can foster a more ambidextrous organizational culture and drive innovation.

Limitations and Future Research
While this study makes significant contributions, it is essential to acknowledge its limitations. The sample was drawn from Indian private sector organizations using convenience sampling, which may limit the generalizability of the findings. Future research should use random sampling techniques and include organizations from other sectors and countries. Additionally, longitudinal studies are needed to examine the long-term impact of organizational ambidexterity on performance and to explore the dynamic interplay between exploration and exploitation over time. Future studies could also explore the relationship between organizational ambidexterity and other organizational constructs, such as organizational culture, leadership styles, and innovation capabilities.

Conclusion: This study developed and validated a 19-item scale to measure organizational ambidexterity in the Indian private sector. Through factor analysis, three dimensions emerged: Organizational Competence, Knowledge Practices, and Strategic Orientation. The scale demonstrates strong reliability and validity, providing a tool for organizations to assess and improve their ambidextrous capabilities. In conclusion, this study provides a valuable contribution to the field of organizational ambidexterity by offering a reliable and valid scale for measuring this critical capability. The scale has the potential to advance both research and practice, providing organizations with a powerful tool for assessing, understanding, and improving their ambidextrous capabilities in today's dynamic and competitive environment.

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