

SCALE DEVELOPMENT OF ORGANIZATIONAL ATTRIBUTES IN CHINESE SECURITIES COMPANIES USING A PLS-SEM APPROACH

FAN, X.¹ – NARAYANAN, S.^{1*} – JAMALUDDIN, Z.¹

¹ Faculty of Business and Accountancy, University of Selangor, Selangor, Malaysia.

*Corresponding author
e-mail: siva[at]unisel.edu.my

(Received 03rd January 2026; revised 04th April 2026; accepted 17th April 2026)

Abstract. Organizational attributes play a critical role in shaping effectiveness in financial institutions, yet existing measurement instruments are largely developed in Western contexts and insufficiently capture the institutional realities of China's securities industry. This study develops and validates a context-specific Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC). Drawing on organizational theory and the Competing Values Framework, organizational attributes are conceptualized as a second-order formative construct composed of five reflective dimensions: organizational culture, leadership effectiveness, innovation and adaptability, employee engagement, and regulatory compliance and ethics. Survey data from 191 employees across nine securities firms in Zhejiang Province were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results support the proposed reflective-formative specification, demonstrating acceptable collinearity, meaningful indicator relevance, and strong criterion (redundancy) validity against a global organizational effectiveness measure. No post-estimation scale refinement was required, as all dimensions were theoretically indispensable. The OAS-CSC provides a validated diagnostic instrument for organizational assessment and advances measurement research in highly regulated financial contexts.

Keywords: *organizational attributes, scale development and validation, PLS-SEM, Chinese securities companies, organizational effectiveness, formative measurement model*

Introduction

Organizational attributes, encompassing cultural, leadership, structural, and procedural characteristics, play a critical role in shaping employee behavior, organizational performance, and strategic adaptability (Schneider et al., 2013; Maher, 2000). In information-intensive and highly regulated environments, these attributes influence how organizations process information, coordinate work, manage risk, and respond to regulatory demands (Hartnell et al., 2011; Denison, 1996). These dynamics are particularly salient in the Chinese securities industry, where firms operate under strict regulatory oversight, rapid technological change, and growing pressure to leverage digital tools in decision-making and client service. Despite the strategic importance of this sector, the organizational attributes of Chinese securities companies remain underexplored, largely due to measurement limitations. Existing organizational attribute scales have been developed primarily in Western contexts or for industries with different institutional and regulatory conditions, such as manufacturing, healthcare, or general banking (Scott and Bruce, 1994; Hofstede et al., 1990; Victor and Cullen, 1988). Such instruments inadequately capture defining features of Chinese securities firms, including strong compliance cultures, technology-embedded workflows, cross-departmental integration, and leadership practices shaped by both market competition and institutional legacy (Zhang and Li, 2010; Tsui et al., 2006). The continued reliance

on generic or loosely adapted measures introduces conceptual ambiguity and constrains the validity of empirical findings in this domain.

The need for a context-specific measurement instrument has intensified as Chinese securities companies increasingly rely on advanced analytics, digital platforms, and artificial intelligence (AI) systems for trading, risk management, customer segmentation, and regulatory compliance (Mikalef et al., 2022; Ransbotham et al., 2021). These developments require organizational configurations that simultaneously support innovation, accuracy, ethical conduct, and regulatory discipline. Conceptually, such attributes are best understood as distinct but complementary dimensions that collectively form an organizations overall attribute profile, rather than as interchangeable manifestations of a single latent trait. To address these gaps, this study develops and validates the Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC). The scale is conceptualized as a second-order formativereflective construct, in which organizational attributes are formed by five theoretically grounded dimensionsorganizational culture, leadership effectiveness, innovation and adaptability, employee engagement, and regulatory compliance and ethicseach measured reflectively at the item level. Drawing on established frameworks (Avolio and Bass, 2004; Schaufeli et al., 2002; Cameron Kim and Quinn Robert, 1999; Victor and Cullen, 1988), a 25-item instrument was developed and empirically validated using survey data from 191 employees across nine securities companies in Zhejiang Province through Partial Least Squares Structural Equation Modeling (PLS-SEM). By developing the first sector-specific and psychometrically validated organizational attributes scale for Chinas securities industry, this study contributes a theoretically grounded measurement framework and provides a practical diagnostic tool for organizational assessment and evidence-based management in a rapidly evolving financial ecosystem.

Literature review

Competing values framework as the conceptual basis for organizational attributes

The development of the Organizational Attributes Scale in this study is grounded in the multidimensional tradition of organizational effectiveness research, most prominently the Competing Values Framework (CVF). Originally developed by Quinn and Rohrbaugh (1983; 1981), the CVF was designed to reconcile competing criteria used to evaluate organizational effectiveness and has since become a widely adopted framework for conceptualizing internal organizational attributes across industries and institutional contexts (Maher, 2000). The CVF is structured around two fundamental dimensions: internal versus external orientation and flexibility versus control. The intersection of these dimensions yields four ideal-type organizational orientationsClan, Adhocracy, Market, and Hierarchyeach emphasizing distinct but competing values. Importantly, the framework does not assume that effective organizations conform to a single orientation; rather, it conceptualizes organizations as configurations of coexisting values, with effectiveness emerging from their balanced integration (Quinn, 1988). This configurational logic makes the CVF particularly suitable as a measurement framework for organizational attributes, as it accommodates diverse cultural, leadership, innovation, human, and governance characteristics within a unified structure. Within this framework, organizational culture and staff engagement align most closely with the Clan orientation, which emphasizes internal focus and flexibility. Clan-oriented

organizations value shared norms, trust, cohesion, and employee involvement (Maher, 2000). Organizational culture reflects the collective values and assumptions that guide behavior, while staff engagement captures the degree to which employees are psychologically invested in organizational goals. In securities companies, where teamwork, knowledge sharing, and relational coordination underpin complex analytical and compliance tasks, these two dimensions jointly represent the human and cultural foundations of organizational functioning.

The Adhocracy orientation, characterized by flexibility and an external focus, emphasizes innovation, experimentation, and responsiveness to environmental change (Quinn and Rohrbaugh, 1983). The dimension of innovation and adaptability directly corresponds to this orientation, capturing an organizations capacity to respond to market volatility, technological disruption, and evolving financial products. In data-intensive financial markets, adaptability is not merely a strategic choice but a core organizational attribute that shapes how firms process information and adjust decision routines. Leadership effectiveness aligns primarily with the Market orientation, which combines an external focus with control and emphasizes goal achievement, competitiveness, and performance accountability. Effective leadership in this orientation involves articulating strategic priorities, allocating resources, and enforcing performance standards to ensure organizational alignment with external demands (Quinn, 1988). For securities firms operating under intense competitive and regulatory pressures, leadership effectiveness constitutes a critical coordinating attribute rather than an isolated managerial trait. Finally, regulatory compliance and ethics are conceptually anchored in the Hierarchy orientation, which emphasizes internal focus and control through formal rules, procedures, and governance mechanisms. In highly regulated financial environments, particularly in the Chinese securities industry, compliance and ethical conduct are institutional imperatives that structure organizational behavior and decision authority. Consistent with the CVF, these characteristics are treated not as external constraints but as internal organizational attributes that contribute to stability, legitimacy, and risk control (Maher, 2000).

Organizational attributes of Chinese financial institutions

The organizational structure of Chinese financial institutions is not a static blueprint but rather a dynamic, "mosaic-like" system. It is rooted in a long and complex historical trajectory that continues to shape contemporary characteristics, blending ancient social norms with modern socialist market logic. As explains, by the end of the Qing dynasty, Chinas banking sector had already evolved into a hybrid institutional system. This system blended traditional indigenous practices with Western organizational forms, while remaining deeply embedded in the clan-based relational structures characteristic of Chinese society. This historical configuration laid the groundwork for the enduring patterns of institutional complexity observable in modern financial organizations today.

Historical foundations and cultural path dependency

Adding broader historical depth to this evolution, for more than a millennium, China relied heavily on Confucian clan-based mechanisms to facilitate interpersonal cooperation. This reliance privileged kinship networks over the development of the impersonal, market-oriented institutions necessary for formal external financing. Their empirical analysis reveals a fascinating path dependency: regions with historically

stronger clan influence established fewer modern banks, indicating that these traditional social structures continue to exert a persistent influence on financial institutional development. Despite these traditional roots, the trajectory of reform in China's financial and corporate sectors has been characterized by a deliberate, incremental approach. This "piecemeal" reform strategy has enabled China to progressively institutionalize formal governance structures, liberalize the financial sector, and enhance the governance practices of state-owned banks. This demonstrates the effectiveness of gradualism often described as "crossing the river by feeling the stones" in China's institutional transformation, allowing the system to adapt without the shock of "big bang" liberalization.

The centrality of state ownership

State ownership constitutes the core organizational attribute of Chinese financial institutions, shaping both their structural design and their behavioral logic. Lo (2020) argues that state-owned enterprises (SOEs) diverge substantially from the conventional Western principle of individual property rights. Despite this divergence, these institutions nonetheless demonstrate strong performance in productivity and profitability. This tension underscores the distinctiveness of China's organizational model, which does not neatly align with Neoclassical assumptions regarding the inherent inefficiency of public ownership. Further illustrating these institutional particularities, Allen et al. (2019) note that government involvement in China's financial system produces a mixed set of outcomes compared with Western market-based models. They highlight a significant paradox: growth in China's most dynamic sectors is often driven by alternative financing channels and informal governance mechanisms rather than by traditional markets and banks. This suggests that state participation shapes organizational pathways that differ fundamentally from those dominant in developed economies. Complementing these perspectives, Zhang and Li (2010) provide empirical evidence that ownership type directly dictates expansion behavior. Their findings show that state-owned banks tend to expand and allocate financial resources according to administrative directives and national strategic goals. In contrast, joint-stock banks which have a more diversified ownership base are more likely to adopt market-driven strategies. Together, these studies illustrate how state ownership produces a bifurcated organizational logic within the sector: one side driven by policy and the other by profit.

Governance, board composition, and gender dynamics

Board composition is a critical organizational attribute shaped by China's historically layered environment. The "founding context" of state-owned firms influences the balance of power on boards. Firms established during periods dominated by market-oriented reforms tend to include a higher proportion of non-state directors. Conversely, those created directly by central government agencies generally include fewer non-state directors, reflecting their origins within the socialist administrative system and their alignment with strategic state objectives. Governance characteristics also have measurable implications for organizational outcomes. Evidence shows that a higher representation of female directors is associated with improvements in profit and cost efficiency, as well as reductions in traditional banking risks. Their study further indicates that greater board independence enhances profit efficiency, while a higher

proportion of executive directors and the presence of CEO chairperson duality tend to be associated with weaker efficiency outcomes. Importantly, the strength of these governance effects is not uniform; the observe that certain board characteristics exert stronger positive effects in banks with more concentrated ownership and in state-owned institutions, suggesting that "good governance" must be tailored to the ownership context.

Systemic risk and regional heterogeneity

Chinese financial institutions display distinctive risk profiles shaped by their high degree of interconnectedness. Network-based analysis that a firms idiosyncratic risk is strongly influenced by its level of connectivity to other institutions. In this environment, risk spillovers emerge as a primary driver of firm-specific vulnerabilities. Extending this systemic perspective, Systemically important financial institutions (SIFIs) and find that large state-owned deposit-taking institutions and major insurers consistently rank as the most critical nodes. Notably, their results also show that smaller financial institutions can become systemically significant during periods of financial stress, underscoring the dynamic nature of Chinas risk landscape. Risk behavior is also a product of regional institutional conditions. Stronger local enforcement of property rights reduces firms dependence on bank lending. Conversely, regions characterized by higher risks of government expropriation tend to push firms toward increased bank borrowing, often with shorter maturities, as a defensive mechanism. This highlights the "institutional complexity" was mentioned, who show that while urbanization and industrialization support financial growth, poor institutional quality and excessive government size can inhibit development.

Transparency and the transition-era legacy

Organizational transparency remains a work in progress. Examining disclosure practices among major Chinese banks, information disclosure in annual reports is generally adequate, it varies substantially across institutions. Interestingly, disclosure levels are not significantly associated with core performance indicators like ROE or capital adequacy. This suggests that transparency practices are driven more by regulatory mandates and "institutional isomorphism" (the tendency of organizations to mimic one another) than by a firms actual financial health. The environment remains constrained by enduring characteristics of the transition-era economic system. These "legacy" traits continue to limit the maturation of financial markets and impede the full development of market-based mechanisms. However, reminder to us that this evolution is multidimensional; financial, trade-related, and broader institutional forces jointly shape the trajectory of Chinas financial system within the global economy.

The ownership-governance Nexus in securities firms

Over the past two decades, scholars have focused specifically on securities firms, where ownership form is the primary lens for understanding organizational anatomy. Using panel data on 369 brokerages, state-controlled firms often suffer from "insider-control" and managerial expropriation. In contrast, private firms experience "blockholder tunneling," where major shareholders extract resources, yet they partially offset this hazard through intensive board activity and specialized committees. These governance differences are amplified by the flat, decentralized structures that the

document in a broader sample of 6,065 listed companies. Fewer hierarchical layers create internal capital markets that allow securities houses to redeploy resources quickly in China's volatile policy environment. Complement by this where demonstrating that board composition norms in China diverge systematically from Western practice, implying that imported governance blueprints must be "contextualized" rather than transplanted wholesale.

Conceptualization and measurement logic

Conceptualizing organizational attributes in Chinese securities companies

Organizational attributes represent a multidimensional configuration of internal characteristics that collectively shape how an organization functions, adapts, and performs. In the context of Chinese securities companies, these attributes encompass cultural norms, leadership practices, innovation and adaptability, employee engagement, and regulatory compliance and ethics. Importantly, these dimensions are conceptually distinct, grounded in different theoretical traditions, and reflect complementary aspects of organizational functioning rather than interchangeable expressions of a single underlying trait. Consistent with prior organizational research, culture reflects shared values and norms guiding behavior (Cameron Kim and Quinn Robert, 1999), leadership effectiveness captures influence and direction-setting mechanisms (Avolio and Bass, 2004), innovation and adaptability reflect responsiveness to environmental change (Scott and Bruce, 1994), employee engagement represents motivational and affective attachment to work (Schaufeli et al., 2002), and regulatory compliance and ethics capture adherence to formal rules and ethical standards (Victor and Cullen, 1988). In Chinese securities firms, each of these dimensions contributes uniquely to organizational functioning under conditions of high regulation, technological intensity, and market volatility. The absence or weakness of any single dimension may fundamentally alter the organizations overall attribute profile.

Justification for a formative reflective measurement specification

Following the measurement decision framework proposed by Jarvis et al. (2003), the relationship between a construct and its dimensions should be determined by the direction of causality, interchangeability of indicators, and the consequences of indicator omission. Applying these criteria, organizational attributes are more appropriately modeled as a formative construct at the higher-order level. First, causality flows from the dimensions to the construct: organizational culture, leadership, innovation, engagement, and compliance form the overall organizational attributes, rather than being caused by them. Second, the dimensions are not interchangeable; a high level of regulatory compliance does not substitute for weak leadership or low innovation capability. Third, omitting any dimension would alter the conceptual meaning of the construct, indicating that each dimension captures a non-redundant facet of organizational attributes (Jarvis et al., 2003). At the same time, each first-order dimension is conceptualized and operationalized as a reflective construct, with multiple items representing manifestations of the underlying dimension. Changes in the latent dimension (e.g., leadership effectiveness or employee engagement) are expected to cause systematic changes in the associated indicators, which are assumed to be correlated and interchangeable at the item level. This reflective specification aligns with established scale development practices and prior validation of the underlying

instruments from which the items were adapted (Avolio and Bass, 2004; Schaufeli et al., 2002; Cameron Kim and Quinn Robert, 1999).

Methodological implications and analytical approach

The resulting specification is a second-order formative-reflective model, which is particularly suitable for complex organizational constructs composed of heterogeneous dimensions (Hair et al., 2021). Given the formative nature of the higher-order construct, traditional reliability and convergent validity metrics (e.g., Cronbachs alpha, AVE) are not applicable at the second-order level. Instead, evaluation focuses on indicator collinearity, indicator relevance, and content validity, assessed through variance inflation factors (VIFs), outer weights, and theoretical justification (Hair et al., 2021). This measurement logic provides a theoretically coherent and methodologically rigorous foundation for the development of the Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC), ensuring that the construct faithfully represents the multifaceted organizational realities of the securities industry while meeting contemporary standards for formative measurement validation.

Materials and Methods

Scale development procedure

The development of the Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC) followed a systematic, theory-driven scale development procedure consistent with established guidelines in organizational and behavioral research (DeVellis, 2017; Hinkin, 1998). The process comprised four sequential stages: (1) domain specification and dimensional delineation, (2) item generation and adaptation, (3) content validation and contextual refinement, and (4) empirical purification and validation. Guided by the conceptualization in Section 2, organizational attributes were specified as a higher-order formative construct composed of five first-order reflective dimensions: organizational culture, leadership effectiveness, innovation and adaptability, employee engagement, and regulatory compliance and ethics. These dimensions were selected based on their theoretical relevance, empirical prevalence in prior organizational research, and contextual salience to the Chinese securities industry.

Item generation and theoretical anchoring

Initial items were generated through systematic adaptation of well-established measurement instruments in organizational behavior and management research. Organizational culture items were adapted from the Competing Values Framework to capture shared values and norms relevant to performance and coordination (Cameron Kim and Quinn Robert, 1999). Leadership effectiveness items were drawn from transformational leadership literature, emphasizing direction setting, motivation, and decision support (Avolio and Bass, 2004). Innovation and adaptability items reflected employees proactive behaviors and organizational responsiveness to change (Scott and Bruce, 1994). Employee engagement items captured vigor, dedication, and absorption at work (Schaufeli et al., 2002). Regulatory compliance and ethics items were adapted from ethical climate research to reflect organizational adherence to rules, ethical standards, and regulatory discipline (Victor and Cullen, 1988). Items were retained only when they demonstrated clear conceptual alignment with their respective dimensions

and relevance to securities firms operational realities, such as compliance-driven workflows, technology-embedded processes, and cross-functional coordination. Redundant or overly generic items were removed to preserve parsimony and conceptual clarity.

Contextual adaptation for Chinese securities companies

To ensure contextual validity, all items were refined to reflect the institutional, regulatory, and technological characteristics of Chinas securities industry. This included anchoring item wording to securities-specific practices, such as regulatory reporting, risk controls, data-driven decision processes, while preserving the original theoretical meaning of each construct. A translation and back-translation procedure were employed to ensure linguistic equivalence and semantic accuracy in the Chinese context (Brislin, 1980). The resulting preliminary scale consisted of 25 items across the five dimensions, each measured on a five-point Likert scale ranging from strongly disagree to strongly agree. This structure supports reflective measurement at the first-order level while enabling formative aggregation at the second-order level, consistent with the conceptualization of organizational attributes as a multidimensional configuration.

Preparation for empirical validation

Consistent with the formative reflective specification, the scale was designed to support subsequent evaluation using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is particularly suitable for formative constructs and theory-building research (Hair et al., 2021). The empirical validation procedures, including data screening, reliability assessment, and formative indicator evaluation, are detailed in the following section.

Sample and context

The data were collected from employees of nine securities firms located in Zhejiang Province, China. In 2025, Zhejiangs GDP reached 9.45 trillion RMB, ranking 4th in China. The financial sector grew by 7.9%, contributing approximately 89% to the total GDP. The province remains a leader in credit support for private enterprises and digital economy integration. Respondents included managerial, technical, and operational staff. Using a purposive sampling strategy, 250 questionnaires were distributed online using wenjuan.com and 191 valid responses were returned, representing a 76 % usable-response rate. This sample size met the recommended minimum ratio of five to ten cases per measured variable for exploratory factor analysis (Hair et al., 2021) (*Table 1*).

Table 1. Original Organizational Attributes Questionnaire for the CSC (OAs-CSC) items.

Dimension	Item Number	Item Statement	Supporting Reference
Organizational Culture	C1	The company fosters a collaborative environment where employees work together to achieve common goals.	Cameron Kim and Quinn Robert (1999) (OCAI clan culture dimension)
	C2	The company encourages employees to take initiative and propose new ideas.	Cameron Kim and Quinn Robert (1999) (OCAI adhocracy culture dimension)
	C3	The company emphasizes achieving competitive performance and market leadership.	Cameron Kim and Quinn Robert (1999) (OCAI market culture dimension)

	C4	The company maintains clear rules and procedures to ensure operational efficiency.	Cameron Kim and Quinn Robert (1999) (OCAI hierarchy culture dimension)
	C5	The company's values align with promoting trust and transparency among employees.	Hofstede et al. (1990) (cultural alignment in organizations)
Leadership Effectiveness	LE1	Leaders in the company inspire employees with a clear vision for the future.	Avolio and Bass (2004) (MLQ transformational leadership)
	LE2	Leaders provide constructive feedback to help employees improve their performance.	Avolio and Bass (2004) (MLQ individualized consideration)
	LE3	Leaders set clear expectations and reward employees for meeting objectives.	Avolio and Bass (2004) (MLQ transactional leadership)
	LE4	Leaders encourage employees to think creatively in solving problems.	Tsui et al. (2006) (leadership in Chinese firms)
	LE5	Leaders demonstrate fairness and integrity in decision-making.	Tsui et al. (2006) (ethical leadership in Chinese contexts)
Innovation and Adaptability	IA1	The company actively seeks new ways to improve its services and products.	Scott and Bruce (1994) (innovation behaviour scale)
	IA1	Employees are encouraged to experiment with new approaches to their work.	Scott and Bruce (1994) (innovation behaviour scale)
	IA3	The company quickly adapts to changes in market conditions.	Zhang and Li (2010) (adaptability in Chinese firms)
	IA4	The company invests in technology to enhance operational efficiency.	Zhang and Li (2010) (technological innovation in finance)
	IA5	The company encourages learning from industry best practices.	Scott and Bruce (1994) (organizational learning)
Employee Engagement	EE1	I feel motivated to contribute to the company's success.	Schaufeli et al. (2002) (UWES vigor dimension)
	EE2	I am enthusiastic about my job in this company.	DROPPED
	EE3	I am fully absorbed in my work and lose track of time.	Schaufeli et al. (2002) (UWES absorption dimension)
	EE4	The company provides opportunities for my professional growth.	(engagement in Chinese contexts)
	EE5	I feel valued for my contributions to the company.	(employee engagement)
Regulatory Compliance and Ethics	RCE1	The company strictly adheres to financial regulations and industry standards.	Victor and Cullen (1988) (ethical climate questionnaire)
	RCE2	The company promotes ethical behavior in all business dealings.	Victor and Cullen (1988) (ethical climate questionnaire)
	RCE3	Employees are trained to understand and comply with regulatory requirements.	(compliance in Chinese financial firms)
	RCE4	The company has clear policies to address unethical behavior.	Victor and Cullen (1988) (ethical climate questionnaire)
	RCE5	The company prioritizes client interests in its operations.	(client orientation in Chinese securities firms)
Universal Item	Organization Effectiveness	Overall, my organization possesses the internal structures, practices, and norms necessary to operate effectively in its business environment.	

Results and Discussion

Validation results

All model estimations and bootstrapping procedures were conducted using SmartPLS 4 (Ringle et al., 2024).

Reflective measurement model assessment (First order construct)

The reflective measurement properties of the five first-order constructs organizational culture, leadership effectiveness, innovation and adaptability, employee engagement, and regulatory compliance and ethics were evaluated using the PLS-SEM algorithm (Table 2). Indicator reliability was assessed through outer loadings, while construct-level reliability and convergent validity were examined using composite reliability and average variance extracted (AVE). Most indicators exhibited satisfactory outer loadings. One engagement item (EE2) was removed due to an extremely low outer loading, indicating insufficient empirical representation of the underlying construct. Following this refinement, the employee engagement construct demonstrated satisfactory reliability and convergent validity. This targeted item removal reflects recommended scale purification practices and does not alter the conceptual domain of the engagement dimension. The innovation and adaptability construct demonstrated strong convergent validity (AVE = 0.690) and high composite reliability, despite one indicator (IA4) exhibiting a relatively low outer loading. Given that the constructs AVE exceeded recommended thresholds and IA4 captures adaptive experimentation under regulatory constraints, the item was retained to preserve content validity. In contrast, the regulatory compliance and ethics construct exhibited lower AVE and internal consistency compared to other dimensions. This pattern reflects the institutionalized and procedural nature of compliance behaviors in Chinese securities firms, where compliance is enacted through heterogeneous mechanisms such as formal controls, monitoring systems, and rule adherence rather than interchangeable attitudinal indicators. Consistent with organizational research in highly regulated environments, the compliance dimension was retained to ensure comprehensive coverage of this theoretically indispensable organizational attribute, model shown in Figure 1.

Table 2. Reflective measurement model (First order construct) indicator reliability.

Construct	Indicator	Outer Loading
Organizational Culture	C1	0.885
	C2	0.867
	C3	0.953
	C4	0.711
	C5	0.85
Employee Engagement	EE1	0.967
	EE2	0.097 (Dropped)
	EE3	0.289
	EE4	0.94
	EE5	0.968
Innovation & Adaptability	IA1	0.941
	IA2	0.844
	IA3	0.94
	IA4	0.336 (Retained)
	IA5	0.925
Leadership Effectiveness	LE1	0.919
	LE2	0.889
	LE3	0.85
	LE4	0.841
	LE5	0.847
Regulatory Compliance & Ethics	RCE1	0.462
	RCE2	0.329

RCE3	0.844
RCE4	0.648
RCE5	0.379

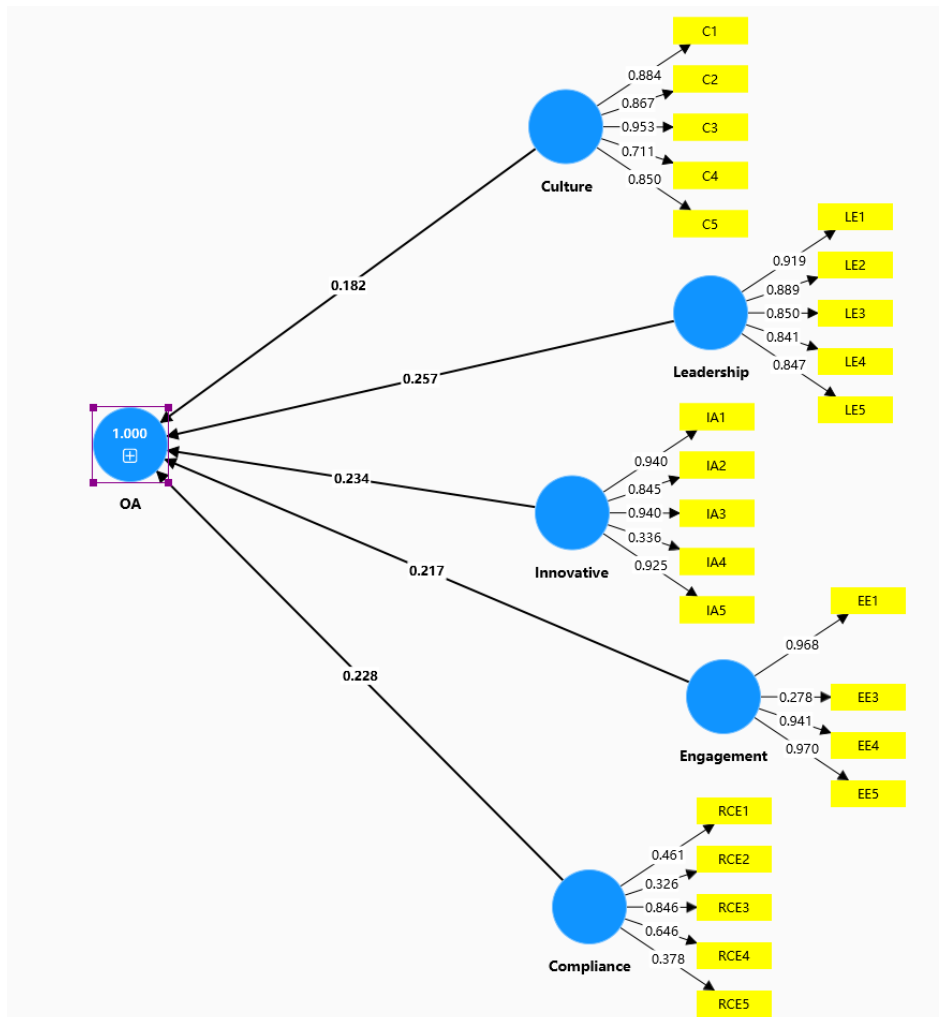


Figure 1. Second-order formative-reflective measurement model of organizational attributes (PLS algorithm results).

Evaluation of the second order formative construct

Organizational Attributes (OA) was specified as a second-order formative construct composed of five first-order dimensions. In accordance with formative measurement theory, the evaluation focused on collinearity diagnostics and indicator relevance, rather than internal consistency or convergent validity indices such as Cronbachs alpha or AVE, which are not applicable to formative constructs (Hair et al., 2021).

Collinearity assessment

Collinearity among the formative dimensions was assessed using variance inflation factors (VIFs). VIF is a diagnostic statistic and does not involve significance testing or p-values. Following conservative guidelines, VIF values below 3.3 indicate no serious multicollinearity, while values below 10 are generally acceptable in complex hierarchical models (Hair et al., 2021), states shown in Table 3. Following the

guidelines of Hair et al. (2019, 2022), Variance Inflation Factor (VIF) values below 3.3 indicate an absence of critical multicollinearity. While several formative dimensions in this study exceed this conservative threshold, such results are anticipated in higher-order constructs where organizational dimensions are conceptually intertwined. Despite these elevated values specifically in culture, innovation and adaptability, leadership effectiveness, and employee engagement all VIFs remain well below the upper limit of 10, indicating no threats to estimation instability. Although the compliance dimension exhibits weaker reflective psychometric properties at the first-order level, this does not undermine its role in the second-order formative construct. As a formative component, compliance contributes a distinct and non-substitutable aspect of organizational attributes in securities firms operating under stringent regulatory regimes. Because these indicators are theoretically essential, non-substitutable, and do not represent "pathological" collinearity, they were retained to preserve the content validity and substantive meaning of the organizational attributes construct.

Table 3. Collinearity assessment for formative indicators of organizational attributes.

Formative Dimension → OA	VIF	Compared to 3.3
Compliance	1.743	Below threshold
Organizational Culture	6.893	Above 3.3
Employee Engagement	3.605	Slightly above 3.3
Innovation & Adaptability	7.404	Above 3.3
Leadership Effectiveness	7.617	Above 3.3

Note: Variance Inflation Factor (VIF) values were obtained from the inner model collinearity statistics in SmartPLS.

Indicator relevance and weight significance

The relevance of the formative indicators was examined through bootstrapped outer weights using 5,000 resamples. Bootstrapping provides p-values for outer weights, indicating whether a formative dimension contributes uniquely to the formation of the higher-order construct. The results, shown in *Table 4*, indicate that innovation and adaptability, employee engagement, and regulatory compliance and ethics have statistically significant outer weights, demonstrating strong unique contributions to organizational attributes. In contrast, organizational culture and leadership effectiveness exhibit non-significant outer weights. However, both culture and leadership effectiveness display high and statistically significant outer loadings, indicating substantial absolute contributions to the construct. According to Hair et al. (2022), formative indicators with non-significant weights but high loadings should be retained when supported by strong theoretical justification. Given the central role of culture and leadership in organizational theory and their contextual importance in regulated financial institutions, their retention is theoretically warranted and enhances content validity.

Table 4. Formative measurement results: Outer weights and loadings (Bootstrapping).

Dimension → OA	Outer Weight	t-value	p-value	Outer Loading
Organizational Culture	-0.165	0.972	0.331	0.876
Leadership Effectiveness	0.137	0.755	0.45	0.917
Innovation & Adaptability	0.564	3.827	<0.001	0.958
Employee Engagement	0.304	2.876	0.004	0.896
Regulatory Compliance & Ethics	0.277	2.831	0.005	0.747

Note: Bootstrapping was conducted with 5,000 resamples. Following Hair et al. (2021), formative indicators with non-significant outer weights but high and significant outer loadings were retained based on strong theoretical justification.

Criterion (redundancy) validity using a universal effectiveness item

To establish convergent validity at the formative level, a redundancy analysis was conducted by linking organizational attributes to a global single-item measure capturing overall organizational effectiveness. This universal item serves as an external criterion rather than as a formative or reflective indicator of the construct. Bootstrapping results, shown in Table 5, reveal a strong and statistically significant relationship between organizational attributes and perceived effectiveness ($\beta = 0.818$, $p < 0.001$), exceeding the recommended threshold for redundancy validity. This finding provides robust evidence that the formative configuration of organizational attributes meaningfully translates into employees holistic evaluations of organizational effectiveness, thereby supporting the constructs criterion-related validity (Figure 2).

Table 5. Criterion (Redundancy) validity using the universal effectiveness item.

Path	β	t-value	p-value	95% CI
Organizational Attributes → Effectiveness	0.818	35.539	<0.001	[0.776, 0.866]

Note: The universal effectiveness item was modeled as an external criterion for redundancy analysis. A path coefficient exceeding 0.70 provides evidence of convergent validity for the formative construct (Hair et al., 2021; Diamantopoulos and Winklhofer, 2001).

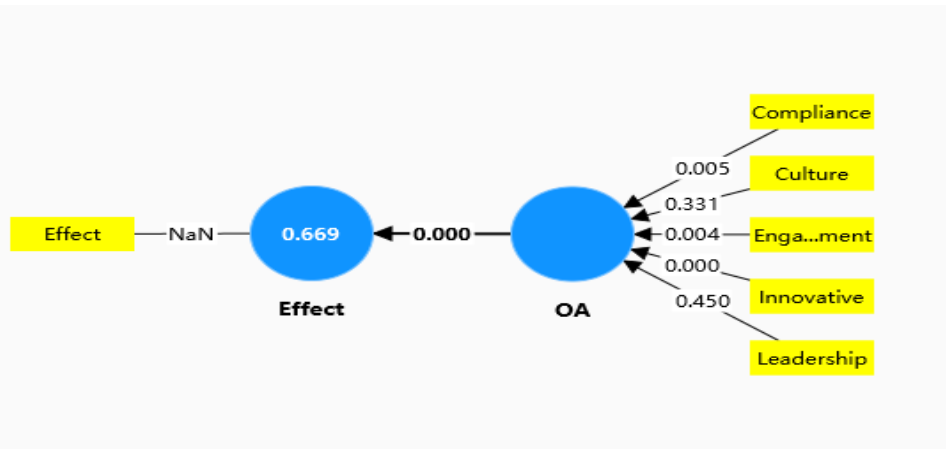


Figure 2. Bootstrapped formative model with global organizational effectiveness criterion.

Summary of validation findings

The validation results provide strong support for the psychometric soundness of the Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC). As shown in Table 6, the reflective first-order constructs demonstrate acceptable measurement properties, while the second-order formative construct satisfies collinearity diagnostics, exhibits meaningful indicator relevance, and demonstrates strong criterion validity. These findings confirm the appropriateness of modeling organizational attributes as a second-order formative reflective construct and establish a rigorous measurement foundation for future empirical research in the Chinese securities industry.

Table 6. Summary of measurement model evaluation.

Level	Assessment Criterion	Result
First-order (Reflective)	Indicator reliability	Supported
	Content validity	Supported
Second-order (Formative)	Collinearity (VIF)	Acceptable
	Indicator relevance	Partially supported
	Content validity	Strong
Criterion validity	Redundancy analysis	Supported

Note: Evaluation criteria follow formative and reflective measurement guidelines for PLS-SEM (Hair et al., 2021).

The purpose of this study was to develop and validate a contextually grounded measurement instrument for assessing organizational attributes in Chinese securities companies. By conceptualizing organizational attributes as a second-order formative reflective construct and empirically validating the Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC), this study responds to longstanding measurement limitations in organizational research within highly regulated and technology-intensive financial environments.

Interpretation of measurement model findings

The empirical results provide strong support for the proposed measurement specification. At the first-order level, the reflective dimensions organizational culture, leadership effectiveness, innovation and adaptability, employee engagement, and regulatory compliance and ethics demonstrated acceptable indicator reliability and theoretical coherence. Although several indicators exhibited lower loadings, these items capture boundary conditions and compliance-driven behaviors that are structurally embedded in securities firms and therefore remain essential for preserving content validity. Retaining such items aligns with contemporary scale development guidance, which emphasizes theoretical completeness over mechanical optimization of statistical fit. The relatively weaker convergent validity of the compliance dimension warrants theoretical interpretation rather than mechanical correction. In the Chinese securities market, compliance is deeply institutionalized, externally mandated, and embedded in formal procedures rather than internalized attitudes. Consequently, compliance-related behaviors may not co-vary strongly at the individual perception level. This finding reinforces the appropriateness of modeling organizational attributes as a formative configuration and highlights the limitations of applying strict reflective criteria to institutionally constrained organizational phenomena.

At the second-order level, the formative specification of organizational attributes was empirically justified. Bootstrapping results revealed that innovation and adaptability, employee engagement, and regulatory compliance and ethics contribute significantly to the formation of organizational attributes, highlighting the central role of adaptability, workforce involvement, and compliance discipline in the operational effectiveness of Chinese securities companies. In contrast, organizational culture and leadership effectiveness exhibited non-significant formative weights but high and significant outer loadings. This pattern suggests that while these dimensions may not contribute uniquely beyond other attributes, they constitute foundational organizational conditions without which the construct would be conceptually incomplete. Importantly, collinearity diagnostics revealed elevated VIF values for several formative dimensions, reflecting

the interdependent nature of organizational characteristics in practice. Rather than indicating misspecification, these results underscore that organizational attributes in securities firms operate as a tightly coupled configuration, where leadership, culture, innovation, and compliance co-evolve under shared institutional constraints. Consistent with formative measurement theory, these dimensions were retained to preserve the substantive meaning of the construct.

Validation of organizational attributes as a holistic construct

The inclusion of a global effectiveness criterion provided additional validation for the OAS-CSC. The strong and statistically significant relationship between organizational attributes and perceived organizational effectiveness demonstrates that the formative configuration of attributes meaningfully translates into employees holistic evaluations of organizational functioning. This finding supports the argument that organizational attributes should be modeled as a composite capability rather than as a unidimensional latent trait, particularly in complex financial institutions where effectiveness emerges from the alignment of multiple organizational elements.

Theoretical contributions

This study contributes to organizational measurement literature in three important ways. First, it advances scale development research by demonstrating the appropriateness of a formative-reflective specification for organizational attributes, addressing a common mismatch between construct conceptualization and measurement practice. Second, it extends organizational theory into the context of Chinese securities companies by empirically operationalizing attributes that reflect regulatory intensity, technological embeddedness, and institutional hybridity. Third, the validated scale provides a methodological foundation for future research examining how organizational attributes interact with digital capabilities, decision-making processes, and performance outcomes in financial institutions.

Practical implications

For practitioners and regulators, the OAS-CSC offers a diagnostic tool for assessing organizational strengths and weaknesses in a systematic and evidence-based manner. Managers can use the scale to identify imbalances across organizational dimensions for example, strong compliance structures but weak innovation capacity and design targeted interventions accordingly. Regulators and policymakers may also find the scale useful for benchmarking organizational readiness in an industry undergoing rapid digital transformation and regulatory evolution.

Limitations and future research

While the study provides a robust validated instrument, its findings should be interpreted in light of certain limitations. The sample was drawn from securities companies in Zhejiang Province, which may limit generalizability to other regions or financial subsectors. Future research could apply the OAS-CSC in different institutional contexts, test its longitudinal stability, or examine its predictive validity with objective performance indicators. Additionally, future studies may explore higher-order interactions between organizational attributes and emerging digital capabilities, such as

artificial intelligence, to further enrich understanding of organizational effectiveness in financial institutions.

Conclusion

This study developed and validated the Organizational Attributes Scale for Chinese Securities Companies (OAS-CSC), addressing a critical gap in organizational measurement within highly regulated and technologically intensive financial environments. By conceptualizing organizational attributes as a second-order formative reflective construct, the study aligns measurement logic with organizational theory and overcomes limitations associated with applying generic or purely reflective instruments to complex institutional contexts. Empirical validation using PLS-SEM and bootstrapping provides strong support for the psychometric soundness of the scale. The reflective first-order dimensions demonstrate acceptable measurement properties, while the formative higher-order construct satisfies key validation criteria, including collinearity diagnostics, indicator relevance, and criterion (redundancy) validity. Importantly, the inclusion of a global effectiveness item confirms that the formative configuration of organizational attributes meaningfully translates into employees holistic evaluations of organizational functioning. Consistent with best practices in formative measurement and scale development, no post-estimation refinement was undertaken. Although certain indicators and formative dimensions exhibited non-optimal statistical characteristics such as non-significant outer weights or elevated VIF values these results do not indicate misspecification. Rather, they reflect the interdependent and complementary nature of organizational attributes in securities firms. Removing such indicators would have narrowed the conceptual domain of the construct and weakened content validity. Retaining all theoretically essential dimensions therefore represents a deliberate and methodologically justified decision, ensuring that the scale fully captures the organizational realities of the Chinese securities industry.

The OAS-CSC makes several contributions. For researchers, it provides a validated, context-specific instrument that can support future studies on organizational capability, digital transformation, and decision-making in financial institutions. For practitioners and regulators, the scale offers a practical diagnostic tool for assessing organizational configurations, identifying structural imbalances, and guiding evidence-based organizational development initiatives. This study establishes the OAS-CSC as a robust and theoretically grounded measurement instrument suitable for both academic research and applied organizational assessment. Importantly, no further scale refinement was undertaken beyond the removal of one empirically invalid engagement item, as all remaining dimensions and indicators were theoretically essential for capturing the organizational realities of Chinese securities companies. By integrating rigorous measurement logic with contextual sensitivity, the scale lays a solid foundation for advancing empirical research on organizational attributes in China's evolving financial sector.

Acknowledgement

The authors gratefully acknowledge the participating securities companies in Zhejiang Province for providing access to respondents and supporting data collection.

The authors also thank all respondents for their voluntary participation and valuable insights. Any remaining errors are solely the responsibility of the authors.

Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

REFERENCES

- [1] Allen, F., Qian, J.Q., Qian, M. (2019): A review of China's institutions. – *Annual Review of Financial Economics* 11(1): 39-64.
- [2] Avolio, B.J., Bass, B.M. (2004): Multifactor leadership questionnaire (TM). – Mind Garden, Inc. Menlo Park, CA 10p.
- [3] Cameron Kim, S., Quinn Robert, E. (1999): Diagnosing and changing organizational culture. – Prantice Hall 259p.
- [4] Denison, D.R. (1996): What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. – *Academy of Management Review* 21(3): 619-654.
- [5] DeVellis, R.F. (2017): Scale development: Theory and applications. – Sage 256p.
- [6] Diamantopoulos, A., Winklhofer, H.M. (2001): Index construction with formative indicators: An alternative to scale development. – *Journal of Marketing Research* 38(2): 269-277.
- [7] Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M., Danks, N.P., Ray, S. (2021): Partial least squares structural equation modeling (PLS-SEM) using R: A workbook. – Springer International Publishing 208p.
- [8] Hartnell, C.A., Ou, A.Y., Kinicki, A. (2011): Organizational culture and organizational effectiveness: a meta-analytic investigation of the competing values framework's theoretical suppositions. – *Journal of Applied Psychology* 96(4): 677-694.
- [9] Hinkin, T.R. (1998): A brief tutorial on the development of measures for use in survey questionnaires. – *Organizational Research Methods* 1(1): 104-121.
- [10] Hofstede, G., Neuijen, B., Ohayv, D.D., Sanders, G. (1990): Measuring organizational cultures: A qualitative and quantitative study across twenty cases. – *Administrative Science Quarterly* 35(2): 286-316.
- [11] Jarvis, C.B., MacKenzie, S.B., Podsakoff, P.M. (2003): A critical review of construct indicators and measurement model misspecification in marketing and consumer research. – *Journal of Consumer Research* 30(2): 199-218.
- [12] Maher, M.A. (2000): Diagnosing and changing organizational culture: Based on the competing values framework. – Emerald Group Publishing Limited 13(3): 300-303.
- [13] Mikalef, P., Krogstie, J., Pappas, I.O., Pavlou, P.A. (2022): Investigating the effects of big data analytics capabilities on firm performance: The mediating role of dynamic capabilities. – *Information & Management* 59(1): 15p.
- [14] Quinn, R.E. (1988): Beyond rational management: mastering the paradoxes and competing demands of high performance. – Jossey-Bass 199p.
- [15] Quinn, R.E., Rohrbaugh, J. (1983): A spatial model of effectiveness criteria: Towards a competing values approach to organizational analysis. – *Management Science* 29(3): 363-377.
- [16] Quinn, R.E., Rohrbaugh, J. (1981): A competing values approach to organizational effectiveness. – *Public Productivity Review* 5(2): 122-140.
- [17] Ransbotham, S., Kiron, D., Gerbert, P., Reeves, M. (2021): Artificial intelligence in business gets real. – MIT Sloan Management Review & Boston Consulting Group 2p.

- [18] Ringle, C.M., Wende, S., Becker, J.M. (2024): SmartPLS 4. SmartPLS GmbH. – SmartPLS 3p.
- [19] Schaufeli, W.B., Salanova, M., González-Romá, V., Bakker, A.B. (2002): The measurement of engagement and burnout: A two-sample confirmatory factor analytic approach. – *Journal of Happiness Studies* 3(1): 71-92.
- [20] Schneider, B., Ehrhart, M.G., Macey, W.H. (2013): Organizational climate and culture. – *Annual Review of Psychology* 64(1): 361-388.
- [21] Scott, S.G., Bruce, R.A. (1994): Determinants of innovative behavior: A path model of individual innovation in the workplace. – *Academy of Management Journal* 37(3): 580-607.
- [22] Tsui, A.S., Wang, H., Xin, K.R. (2006): Organizational culture in China: An analysis of culture dimensions and culture types. – *Management and Organization Review* 2(3): 345-376.
- [23] Victor, B., Cullen, J.B. (1988): The organizational bases of ethical work climates. – *Administrative Science Quarterly* 33(1): 101-125.
- [24] Zhang, Y., Li, H. (2010): Innovation search of new ventures in a technology cluster: The role of ties with service intermediaries. – *Strategic Management Journal* 31(1): 88-109.