

TRANSFORMING PUBLIC UNIVERSITIES TOWARD LEARNING ORGANIZATIONS: VALIDATING AND RECALIBRATING THE DLOQ FOR INDONESIAN HIGHER EDUCATION

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ABSTRACT

Transforming public universities into learning organizations requires measurement instruments that are psychometrically valid within public sector contexts, yet the Dimensions of Learning Organization Questionnaire (DLOQ), developed by Marsick & Watkins (1996; 2003), has been applied in such settings on an untested portability assumption. Employing a psychometric validation study design based on PLS-SEM via SmartPLS 4.0, this study administered the DLOQ to 100 civil servants at Sriwijaya University as a representative Indonesian state university (PTN) through proportionate random sampling. Outer model evaluation identified several items that failed to meet psychometric validity thresholds, and their elimination demonstrably improved overall model quality, providing empirical evidence of systematic instrument non-portability. A critical paradoxical finding emerged: dimensions receiving highly positive perceptual scores simultaneously produced items that failed psychometric validation, confirming a fundamental distinction between perceived learning culture and measured learning capability. This study yielded the DLOQ-PTN, a calibrated 14-item instrument that is valid, reliable, and contextually appropriate for learning organization research in Indonesian public universities, ready for replication by future researchers.

Keywords: Higher Education; Instrument Non-Portability; Learning Organization; Public Sector

INTRODUCTION

Scientifically credible theoretical constructs and empirical conclusions in quantitative research are determined by one fundamental requirement: the existence of valid and reliable instruments (Hair et al., 2022). In the evolving body of research on learning organizations, the Dimensions of Learning Organization Questionnaire (DLOQ), developed by Marsick & Watkins (1996; 2003), has become the dominant instrument globally. This instrument has been used to measure both the capabilities and the existence of learning organizations in more than seventy studies across various

organizational contexts (Watkins & Kim, 2017). The DLOQ measures the capabilities of learning organizations through seven dimensions operating at three levels: the individual level includes “Create Continuous Learning Opportunities” and “Promote Inquiry and Dialogue”; the group level includes “Encourage Collaboration and Team Learning” and “Create Systems to Capture and Share Learning”; and the organizational level includes “Empower People Toward a Collective Vision,” “Connect the Organization to the Environment,” and “Provide Strategic Leadership for Learning” (Marsick & Watkins, 2003). This three-level DLOQ model is a synthesis of Senge’s (1990) three-tiered generative systems approach to learning and Garvin’s (2003) comprehensive perspective, which emphasizes an organization’s ability to convert knowledge into measurable actions.

The development of DLOQ as a learning organization instrument has been predominantly concentrated in the private sector, with its application in public sector organizations lagging considerably behind. Research on learning organizations in the public sector has fallen behind, as explicitly identified by Anand & Brix (2022). Lenart-Gansiniec & Sułkowski (2020) further note that research on learning organizations in the public domain remains riddled with unanswered questions and unresolved ambiguities. A narrative review by Rad & Bocos (2024) unequivocally concludes that identifying effective antecedents and measurement instruments to foster the formation of learning organizations in the public sector remains one of the most pressing research agendas of this decade. A decade earlier, Ferguson et al. (2013) observed that scholars had been overly focused on understanding the nature and processes of learning organizations, rather than statistically determining the extent to which an organization has successfully transformed into a measurable learning organization, a gap that directly limits public sector institutions’ capacity to concretely map and develop their learning capabilities.

The scarcity of research on the DLOQ was further confirmed by Kim et al. (2015), who found that studies utilizing this instrument have remained heavily dominated by private-sector organizational contexts for over a decade. Kim et al. (2015) explicitly recommended validating the DLOQ in organizational contexts that differ from its original development setting, a recommendation echoed by Kortsch et al. (2019), who emphasized that contextual adaptation is an unavoidable prerequisite before the DLOQ can be applied beyond its original setting. This persistent homogeneity in DLOQ usage motivated the present study to systematically test and calibrate the instrument within the context of Indonesian state universities (PTN), which are public sector educational institutions with distinctive bureaucratic characteristics that have yet to be empirically examined.

The DLOQ has clearly emerged as the dominant instrument for measuring the existence and capability of learning organizations, yet predominantly within private-sector contexts. This raises a critical methodological question: can an instrument developed and validated in private-sector organizations be applied directly, without modification, to public-sector organizations? This uncertainty is methodologically termed the “instrument

portability assumption," given that the DLOQ was designed from the outset to measure learning organization phenomena within market-driven private corporations (Marsick & Watkins, 1996). Historically, the conceptual structure and framework of learning organizations were built upon the logic of private-sector organizations, characterized by high flexibility, autonomous decision-making, market competition orientation, and grounded in global corporate case studies (Senge, 1990; Marquardt, 2002). This exclusive private-sector foundation, with no representation from public organizations whatsoever, implies that the DLOQ inherits a contextual bias rooted in the private-sector context from which it was originally developed.

State universities (PTN), as representatives of public sector educational organizations, serve as the research locus of this study precisely because they possess characteristics that are fundamentally distinct from those of the private sector and can inherently alter respondents' response patterns to DLOQ items that are assumed to be universally applicable. Public sector organizations operate under government regulatory mandates, rigid hierarchical structures, multi-layered accountability systems, limited strategic autonomy, and a dominant risk-averse culture (Ndraha, 2005; Rashman et al., 2009). These characteristics, which differ markedly from those of the private sector, logically generate different response patterns among respondents to DLOQ items. As a comparative reference, the Connect Organization to Environment dimension yielded high scores in the public health sector, specifically among Greek public hospitals, as reported by Goula et al. (2020), while the Provide Strategic Leadership for Learning dimension was found to require removal from the DLOQ structure based on findings from Ionescu et al. (2019) in the Romanian healthcare sector.

Inconsistencies in DLOQ items were further identified in the present study, which administered the instrument to 100 civil servants (ASN) at Sriwijaya University. This institution was selected as a representative of State Universities with Legal Entity Status (PTN-BH), whose bureaucratic characteristics are comparatively less rigid than those of other public sector institutions such as local governments. Through outer model evaluation using PLS-SEM, several items were found to fall below the recommended outer loading validity threshold (Hair et al., 2022). Notably, the elimination of these items demonstrably improved the overall convergent validity and internal consistency reliability of the DLOQ model, suggesting that the removed items had been actively distorting measurement precision when the instrument was applied within a bureaucratic ecosystem.

This study identifies three gaps as scientific justifications. First, the systematic testing gap. While several studies have identified variations in DLOQ factor structures across contexts, including Dekoulou & Trivellas (2014) in Greece, Leufvén et al. (2015) in Nepal, Ju et al. (2021) in China, and Varughese & Rameshkumar (2024) in India, none have explicitly tested the instrument non-portability of the DLOQ from private-sector to public university bureaucratic contexts using a systematic PLS-SEM calibration procedure. Second, the conceptual explanation gap, wherein prior studies reported psychometric

variations without providing adequate conceptual explanations for why specific items failed in particular contexts. Third, the local gap: no study has specifically calibrated the DLOQ for the Indonesian PTN context, despite the fact that PTNs across Indonesia are currently being encouraged to undergo institutional transformation toward becoming learning organizations. Accordingly, this study aims to: (1) psychometrically examine the validity and reliability integrity of the DLOQ when applied to PTNs as representatives of public sector educational institutions; (2) identify and conceptually explain patterns of item validity degradation in relation to the bureaucratic characteristics of PTNs; and (3) produce a calibrated, valid, reliable, and contextually appropriate DLOQ instrument for learning organization research in public sector higher education. The findings provide the first psychometric evidence of DLOQ instrument non-portability in the Indonesian PTN context using systematic PLS-SEM, offer a conceptual explanation for DLOQ validity degradation in public sector settings, and yield replicable DLOQ calibration guidelines as a more accurate standard reference instrument for public sector educational governance research (Watkins & Dirani, 2013; Marsick, 2013).

METHOD

This study employs a psychometric validation study design grounded in a quantitative approach to examine the validity and reliability integrity of the DLOQ when applied to public sector educational institutions. Unlike previous DLOQ validation studies, which predominantly utilized CFA based on CB-SEM (Ionescu et al., 2019; Goula et al., 2020; Leufvén et al., 2015), the present study adopts PLS-SEM via SmartPLS 4.0 on the basis of three relevant methodological advantages: (1) the ability to handle relatively small samples without requiring multivariate normality; (2) the capacity to evaluate reflective measurement models iteratively through bootstrapping procedures; and (3) the production of more stable outer loading values for item calibration in new contexts (Hair et al., 2022; Syahrir et al., 2020). Varughese & Rameshkumar (2024), in their validation of the DLOQ within India's IT sector, confirmed that PLS-SEM yields a more comprehensive psychometric evaluation for validation studies conducted in new organizational contexts. The analytical focus of this study is directed exclusively at outer model evaluation, consistent with its primary objective of identifying items experiencing validity degradation, rather than testing causal relationships among constructs.

The study population comprised civil servants (ASN) at Sriwijaya University, totaling 1,605 individuals, consisting of permanent lecturer civil servants, contract lecturer civil servants (PPPK), permanent educational support staff, and contract educational support staff (PPPK) (Unsri Human Resources Department, December 2024). The sample size was determined using the inverse square root method (Kock & Hadaya, 2018), as refined by Hair et al. (2022), by setting the minimum path coefficient (P_{min}) at 0.25 at a 5% significance level, yielding a required sample of 100 respondents. Sampling was conducted using proportionate random sampling to ensure proportional

representation across each ASN subpopulation. Questionnaires were distributed through a hybrid approach, both in person via paper questionnaires and online via Google Forms, over a period of approximately three months, accompanied by an informed consent form guaranteeing voluntary participation, respondent anonymity, and the exclusive use of data for scientific purposes.

The instrument tested for portability was the version of the DLOQ adapted by Leufvén et al. (2015), which has demonstrated flexibility and reliability in capturing learning dynamics and accurately mapping the specific strengths and weaknesses of learning organizations. This version covers all seven DLOQ dimensions with three items per dimension, ensuring proportional representation: three items for Create Continuous Learning Opportunities (OP1–OP3), three items for Promote Inquiry and Dialogue (OP4–OP6), three items for Encourage Collaboration and Team Learning (OP7–OP9), three items for Create Systems to Capture and Share Learning (OP10–OP12), three items for Empower People Toward a Collective Vision (OP13–OP15), three items for Connect Organization to Environment (OP16–OP18), and three items for Provide Strategic Leadership for Learning (OP19–OP21). Following translation and back-translation procedures into Bahasa Indonesia, the instrument was reduced to 20 items, with one additional item subsequently eliminated based on expert judgment due to potential redundancy. All items were measured using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

DLOQ calibration was conducted through a systematic and iterative outer model evaluation procedure using SmartPLS 4.0, adhering to the guidelines of Hair et al. (2022). These guidelines stipulate that item elimination is not based solely on outer loading values, but is warranted only when the removal of an item demonstrably improves convergent validity or internal consistency reliability above the recommended threshold, thereby yielding a better-fitting model rather than eliminating items merely on the basis of low values. In the first stage, all 20 DLOQ items were entered into the PLS-SEM model and analyzed to generate initial outer loading values. Items with outer loadings between 0.40 and 0.70 were identified as candidates for elimination, and the impact of their removal on the construct's AVE and CR values was systematically evaluated. In the second stage, items demonstrated to reduce the model's convergent validity and reliability were progressively eliminated, and the model was rerun iteratively until all remaining items met the established psychometric thresholds. This calibration process yielded a precise, contextually unbiased, and psychometrically valid instrument suitable for use within the PTN ecosystem as a representative public sector educational institution

The psychometric evaluation of the DLOQ was conducted across two complementary dimensions. First, convergent validity was assessed through: (a) outer loading values (threshold > 0.60; Hair et al., 2022); and (b) Average Variance Extracted (AVE), measuring the extent to which indicator variance is explained by the latent

construct (threshold > 0.50; Bagozzi et al., 1991). Second, discriminant validity was assessed through: (a) cross-loadings, whereby each indicator's correlation with its own construct must exceed its correlation with all other constructs; and (b) the Heterotrait-Monotrait Ratio (HTMT) with a threshold below 0.90 (Henseler et al., 2015), confirmed via bootstrapping with 5,000 subsamples and an upper bound at the 97.5th percentile below 1.00 (Benitez et al., 2020). Construct reliability was evaluated using Cronbach's Alpha (threshold > 0.60) and Composite Reliability (CR, threshold > 0.70), with CR preferred as it does not underestimate reliability (Hair et al., 2022). All thresholds were consistently applied to yield a public sector DLOQ instrument with optimal psychometric precision.

RESULTS & DISCUSSION

Prior to psychometric testing, the DLOQ was administered to 100 civil servants at Sriwijaya University to assess institutional learning organization capability descriptively. Frequency distribution analysis revealed that the overall learning organization capability score reached 80.6%, falling within the "very high" category. This figure represents the aggregate of respondents' assessments across all seven DLOQ dimensions, operationalized into 20 statement items. A breakdown by dimension, as presented in Table 2, reveals significant score variations that collectively contain an analytical paradox constituting the primary methodological contribution of this study.

Table 2. Descriptive Achievement of Seven DLOQ Dimensions

No.	DLOQ Dimension		Items	Score (%)	Category	Psychometric Status
1	Create	Continuous Learning Opportunities	OP1, OP2, OP3	82.8%	Very High	OP1 dropped; OP2–OP3 valid
2	Promote Dialogue	Inquiry and	OP4, OP5, OP6	79.8%	High	OP4, OP6 dropped; OP5 valid
3	Encourage and Team Learning	Collaboration	OP7, OP8	77.6%	High	All valid ✓
4	Create Systems to Capture and Share Learning		OP9, OP10, OP11	80.0%	High	OP10 dropped; OP9, OP11 valid
5	Empower People Toward A Collective Vision		OP12, OP13, OP14	80.3%	High	OP13 dropped; OP12, OP14 valid
6	Connect Organization to Environment		OP15, OP16, OP17	81.0%	Very High	OP16 dropped; OP15, OP17 valid
7	Provide Leadership for Learning	Strategic	OP18, OP19, OP20	81.4%	Very High	All valid ✓
TOTAL LEARNING ORGANIZATION			20 items	80.6%	Very High	14 valid items (DLOQ-PTN)

Source: Processed by the researcher (April 2026)

Table 2 reveals a pattern of analytical paradox that constitutes a significant methodological finding of this study. The sixth dimension, Connect Organization to Environment, achieved a score of 81.0% (very high category); yet item OP16 from this dimension failed psychometric testing with an outer loading of only 0.562. Similarly, other dimensions such as Create Continuous Learning Opportunities (82.8%, very high) and Provide Strategic Leadership for Learning (81.4%, very high) yielded strongly positive perceptual scores while simultaneously containing items that necessitated removal from the construct. This paradox underscores that respondents' self-report perceptions and the psychometric integrity of the instrument represent two fundamentally distinct analytical dimensions that cannot substitute for one another. PLS-SEM-based measurement confirms that high descriptive scores do not guarantee psychometric validity when an instrument is applied in contexts different from those in which it was originally developed (Goh & Richards, 1997).

Instrument Non-Portability as a Cross-Contextual Phenomenon

Outer model testing adhered to the guidelines of Hair et al. (2022), drawing on Hulland (1999) and Bagozzi et al. (1991), which stipulate that items with outer loadings below 0.40 must always be removed, while items with values between 0.40 and 0.70 should only be considered for removal if doing so demonstrably improves internal consistency reliability or convergent validity above the recommended thresholds. Item removal additionally takes into account its potential impact on construct content validity. Figure 1 presents the outer model of the full 20-item DLOQ prior to calibration, with six items, namely OP1 (0.475), OP4 (0.597), OP6 (0.602), OP10 (0.567), OP13 (0.590), and OP16 (0.562), identified as falling below the recommended threshold of 0.60, whose elimination demonstrably improved overall model quality. Notably, all six underperforming items share a common substantive characteristic: they measure dimensions premised on high organizational autonomy, self-initiated learning, and cross-boundary openness, qualities that are inherently misaligned with the regulatory and hierarchical nature of state university bureaucracies. This non-random pattern of validity degradation provides the first empirical signal of systematic instrument non-portability, which is examined in greater depth in the discussion section.

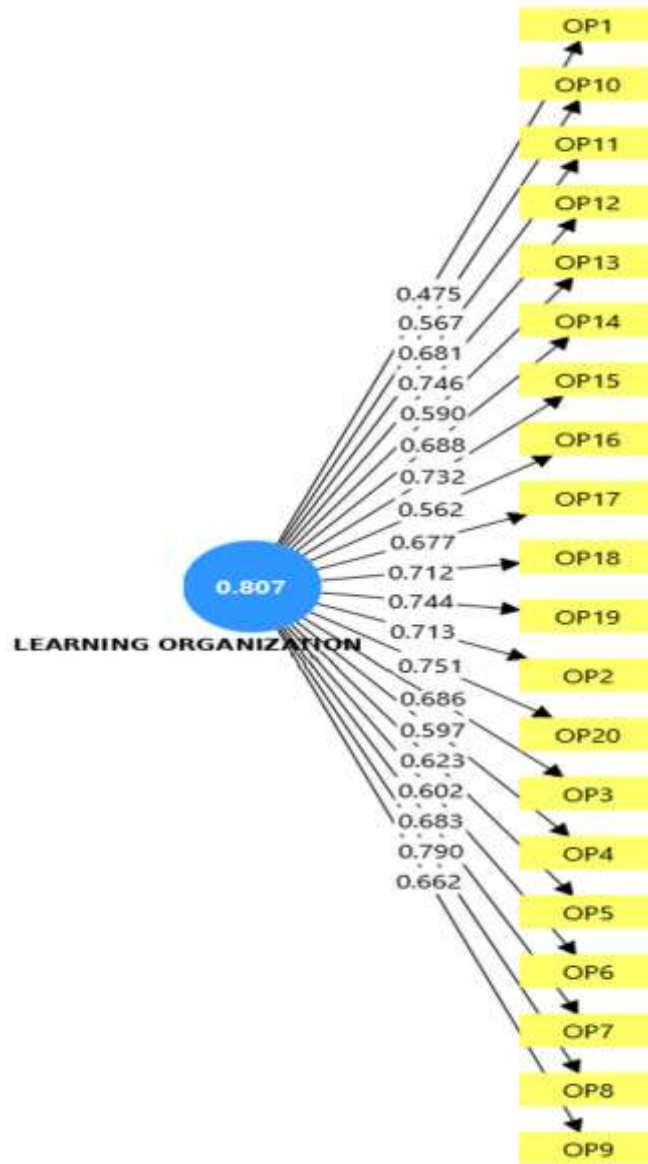


Figure 1. Outer Model of DLOQ Prior to Calibration (20 Items), SmartPLS 4.0 Output (April 2026)

Item removal additionally takes into account its potential impact on construct content validity. Psychometric evaluation of the DLOQ using SmartPLS 4.0 yielded varying outer loading values, with six items identified as meeting the elimination criteria, as presented in Table 3. The distribution of these six eliminated items reveals a non-random pattern, concentrated in dimensions oriented toward organizational autonomy, self-initiated action, and cross-boundary openness, characteristics common in private sector ecosystems but misaligned with the governance structure of state universities. This systematic pattern of validity degradation provides preliminary evidence that the DLOQ carries an inherited private-sector bias that manifests when applied to public bureaucratic contexts.

Table 3. DLOQ Items Eliminated During the Calibration Process

Item	Outer Loading	Dimension		Contextual Justification for Elimination
OP1	0.475	Create Learning Opportunities	Continuous	Assumes self-initiated learning that is not facilitated within the bureaucratic structure of PTN
OP4	0.597	Promote Dialogue	Inquiry and	Assumes freedom to engage in cross-hierarchical dialogue, which is limited in bureaucratic culture
OP6	0.602	Promote Dialogue	Inquiry and	Assumes openness to new perspectives, which is less relevant to the compliance-oriented norms of civil servants
OP10	0.567	Create Systems to Capture and Share Learning		Assumes an independent performance evaluation system inconsistent with the formal systems of PTN
OP13	0.590	Empower People Toward A Collective Vision		Assumes decision-making autonomy that is constrained by the hierarchical structure of PTN-BH
OP16	0.562	Connect Organization to Environment		Assumes responsive flexibility toward the external environment, which is limited by bureaucratic regulations

Source: SmartPLS 4.0 output (April 2026)

An analysis of the distribution of the six eliminated items reveals a pattern that is both non-random and analytically informative. All six items consist of statements whose substantive content pertains to (1) high organizational autonomy, (2) self-initiated action, and (3) openness toward the external environment, characteristics that are common within private corporate ecosystems but do not find adequate expression within the governance structure of public universities as public sector institutions. Conversely, all items comprising the Encourage Collaboration and Team Learning dimension (OP7, OP8) retained their validity with outer loadings ranging from 0.691 to 0.819, consistent with the collectivist culture of public university bureaucracies that are more inherently oriented toward formal teamwork. This pattern is consistent with the findings of Leufvén et al. (2015), who demonstrated that the centralized hierarchical structure of public bureaucracy significantly undermines the validity of autonomy-oriented DLOQ dimensions, and Ionescu et al. (2019), who reported the elimination of the Strategic Leadership dimension due to cultural and sociodemographic factors in a different national context.

The psychometric evaluation of the DLOQ successfully yielded a newly calibrated instrument designated as the DLOQ-PTN. This instrument comprises 14 validated items that, based on the outer model evaluation procedure, have been confirmed as valid for use within PTNs as representative public sector educational institutions. This reduction from the original 20 items to 14 items reflects the systematic removal of contextually misaligned indicators rather than an arbitrary shortening of the instrument. Table 4 presents the final outer loading profile of the DLOQ-PTN, while Table 5 provides comprehensive evidence of its validity and reliability.

Table 4. Final Outer Loading of DLOQ-PTN (14 Valid Items)

Item	Dimension	Outer Loading	Status
OP2	Create Continuous Learning Opportunities	0.698	Valid
OP3	Create Continuous Learning Opportunities	0.691	Valid
OP5	Promote Inquiry and Dialogue	0.620	Valid
OP7	Encourage Collaboration and Team Learning	0.691	Valid
OP8	Encourage Collaboration and Team Learning	0.819 (highest)	Valid
OP9	Create Systems to Capture and Share Learning	0.692	Valid
OP11	Create Systems to Capture and Share Learning	0.693	Valid
OP12	Empower People Toward A Collective Vision	0.759	Valid
OP14	Empower People Toward A Collective Vision	0.688	Valid
OP15	Connect Organization to Environment	0.739	Valid
OP17	Connect Organization to Environment	0.676	Valid
OP18	Provide Strategic Leadership for Learning	0.734	Valid
OP19	Provide Strategic Leadership for Learning	0.753	Valid
OP20	Provide Strategic Leadership for Learning	0.747	Valid

Source: SmartPLS 4.0 output (April 2026) | *OP8 has the highest outer loading (0.819)

Figure 2 presents the outer model of the calibrated DLOQ-PTN instrument comprising 14 valid items, as generated by SmartPLS 4.0. The model demonstrates that all retained items achieve outer loading values above the recommended threshold of 0.60 (Hair et al., 2022), ranging from 0.620 (OP5) to 0.819 (OP8), with the latent construct of the learning organization yielding an $R^2=0.807$. The visual representation confirms the structural integrity of the DLOQ-PTN as a psychometrically sound instrument, free from the contextual bias associated with the six eliminated items documented in Table 3. The contrast between Figure 1 and Figure 2 visually demonstrates the outcome of the calibration process, wherein the removal of contextually misaligned items produced a leaner yet more precise instrument that accurately reflects the learning organization construct within the Indonesian state university ecosystem. The improved model coherence further substantiates the argument that instrument portability cannot be assumed across organizational contexts, but must be empirically verified and calibrated accordingly

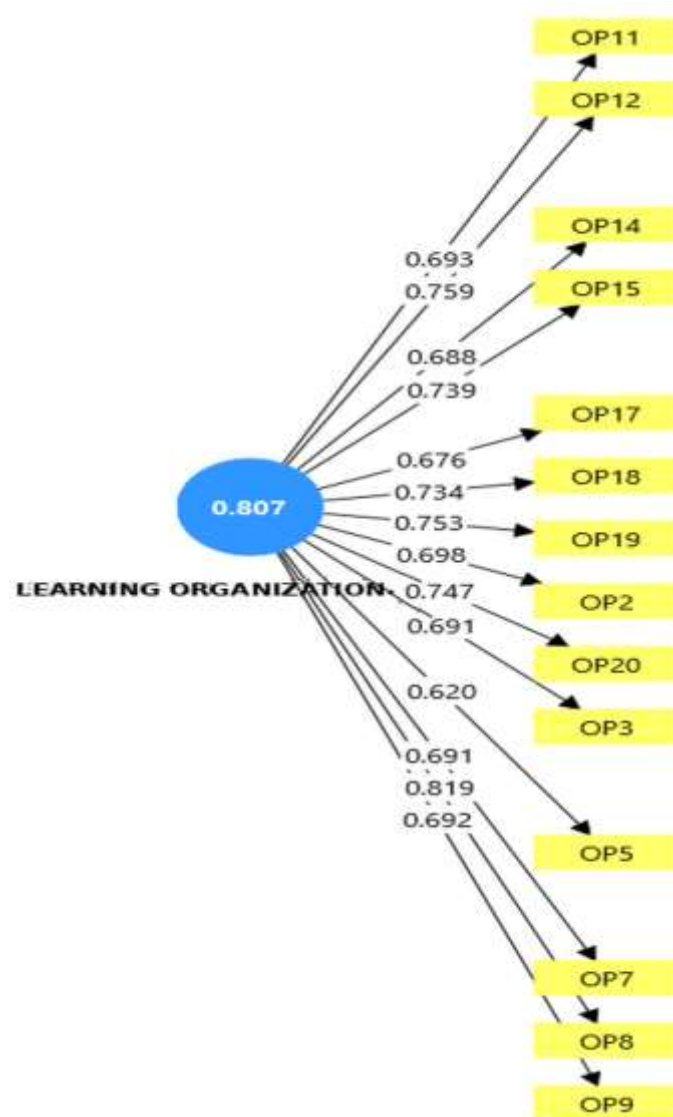


Figure 2. Outer Model of DLOQ-PTN After Calibration (14 Valid Items), SmartPLS 4.0 Output (April 2026)

Table 5. Validity and Reliability Profile of DLOQ-PTN

Psychometric Indicator	Value	Threshold	Status
Average Variance Extracted (AVE)	0.512	> 0.50	Valid ✓
Composite Reliability (CR)	0.926	> 0.70	Reliable ✓
Cronbach's Alpha (CA)	0.926	> 0.60	Reliable ✓
HTMT (highest value)	0.925*	< 1.00 (upper bound: 0.964)	Valid ✓
Outer Loading (range)	0.620–0.819	> 0.60	All items valid ✓

Source: SmartPLS 4.0 output (April 2026) | *Confirmed valid via bootstrapping: upper bound at 97.5th percentile = 0.964 < 1.00 (Henseler et al., 2015; Benitez et al., 2020)

Table 5 confirms that the DLOQ-PTN satisfies all international psychometric criteria. The AVE value of 0.512 exceeds the minimum threshold of 0.50 (Bagozzi et al., 1991), indicating that more than half of the item variance is explained by the latent learning organization construct. The CR value of 0.926, which is recommended over Cronbach's Alpha as it does not underestimate reliability (Hair et al., 2022), confirms excellent internal consistency. One HTMT value of 0.925, which exceeded the conservative threshold of 0.90, was confirmed as valid through bootstrapping with an upper bound at the 97.5th percentile of 0.964, which is below 1.00 (Henseler et al., 2015; Benitez et al., 2020). Item OP8 (0.819) from the Encourage Collaboration and Team Learning dimension registered the highest outer loading, consistent with the collectivist orientation of public university bureaucracies, which more naturally express organizational learning through formal teamwork structures. The complete set of calibrated DLOQ-PTN items, validated and contextually adapted for the Indonesian public university ecosystem, is presented in the Appendix as a ready-to-use reference instrument for future learning organization research in Indonesian higher education institutions.

Beyond Portability Assumptions: Novel Evidence of DLOQ Validity Degradation, Measurement Paradox, and Instrument Recalibration in Public Higher Education

The interpretation of the six-item DLOQ failure pattern in the Indonesian public university context positions these findings as part of a broader phenomenon documented in the cross-contextual DLOQ validation literature, rather than as an isolated anomaly. Ionescu et al. (2019), examining a private healthcare organization in Romania using CFA, eliminated the Strategic Leadership for Learning dimension due to cultural and sociodemographic factors. Leufvén et al. (2015), studying public hospitals in Nepal, found that a centralized hierarchical structure significantly undermined the validity of the Empowerment and Strategic Leadership dimensions. Goula et al. (2020), across six public hospitals in Greece, found that the Connect Organization to Environment dimension actually yielded the highest validity scores. These patterns are not contradictory but collectively confirm that DLOQ instrument non-portability is context-specific: differences in the degree of organizational autonomy and the characteristics of public sector institutions across countries and institutional types produce distinct patterns of validity degradation. This study thus demonstrates that instrument portability must be empirically verified on a context-by-context basis, rather than universally assumed.

Three of the six eliminated DLOQ items originated from institutional-level dimensions, namely Empower People, Connect Organization to Environment, and Strategic Leadership. This is consistent with the meta-analytic findings of Watkins & Dirani (2013), who demonstrated that institutional-level DLOQ dimensions exhibit the greatest cross-cultural variation, particularly in organizational climates where autonomy, empowerment, and external connectivity have not yet been optimally cultivated. This finding extends the explanation beyond the mere reporting of low outer loading values

by linking the psychometric failure of specific items to established organizational culture theory, while simultaneously opening new research avenues concerning the interaction between national cultural dimensions and the validity of learning organization instruments across diverse public sector institutional contexts, particularly within the Southeast Asian region.

The most significant finding of this study is the identification of an analytical paradox with profound implications for how learning organization capability is measured in public sector contexts. A comparison of descriptive and psychometric results reveals that several DLOQ dimensions receiving very high perceptual scores simultaneously yielded items that required elimination on psychometric grounds. This finding extends well beyond an explanation based solely on technical instrument weaknesses; rather, it demonstrates that respondents can provide highly positive perceptual ratings for a given learning organization dimension, yet such ratings do not necessarily reflect a construct measured with sufficient psychometric precision within the bureaucratic ecosystem of state universities. This paradox is explained by a fundamental distinction between perceived learning culture and measured learning capability. Civil servants at Sriwijaya University provided positive evaluations based on normative perceptions of what should exist in accordance with institutional values, rather than on operational realities that can be psychometrically quantified. The presence of social desirability bias in DLOQ responses was previously identified by Kim et al. (2015) in research conducted within highly hierarchical organizational cultures. This bias was further substantiated by Kim & Kim (2016) through an experimental study involving 2,400 respondents across four countries, which demonstrated that respondents in societies prioritizing social harmony consistently provided higher ratings than actual conditions in public sector surveys. Nederhof (1985) established that social desirability bias fundamentally threatens the validity of self-report data, a concern reinforced by Kwak et al. (2021), who demonstrated that such bias poses a serious threat to survey data validity when both independent and dependent variables are susceptible, while also confirming that it can be detected and corrected through systematic statistical techniques.

The paradox described above carries direct policy implications, as the DLOQ applied without contextual calibration within the PTN context has the potential to systematically overestimate learning organization capability relative to actual conditions. Such inaccuracy risks misdirecting institutional transformation policies, as the underlying data upon which they are based would lack psychometric validity. The DLOQ-PTN developed in this study directly addresses this paradox by providing an instrument that measures learning organization capability based on the psychometric realities of the PTN context rather than on private-sector assumptions inherited by the original instrument. Varughese & Rameshkumar (2024) emphasize that any DLOQ validation in a new context must yield a calibrated instrument, rather than merely reporting aggregate reliability values without examining the validity of individual items. The present study not only

answers whether the DLOQ is valid in public universities, but also explains why specific items fail psychometrically and produces an alternative instrument ready for replication. This constitutes a three-layered contribution to the learning organization literature that has not previously been available within the existing DLOQ validation literature (Ionescu et al., 2019; Goula et al., 2020; Watkins & Dirani, 2013).

At the level of practical implications, this study yields two distinct contributions. For researchers, employing the full DLOQ without contextual calibration at PTNs or other Indonesian public sector educational institutions risks producing AVE values below the validity threshold, thereby compromising the integrity of any theoretical constructs and hypothesis tests built upon it. This study recommends the adoption of the DLOQ-PTN (14 items) as the standard measurement instrument for learning organization research at Indonesian public universities, with the documented calibration procedure serving as a replicable guide for adaptation to other public institutional contexts. For university management, the DLOQ-PTN can be adopted as a diagnostic measurement tool to assess the extent to which an institution has developed into a learning organization prior to designing targeted institutional development programs, with particular attention to organizational openness to the external environment and employees' freedom to innovate, two dimensions proven to be the most vulnerable within public university bureaucracies.

CONCLUSIONS

The findings on DLOQ portability from private sector contexts to Indonesian public universities yield three contributions to the development of learning organization research. First, empirically, this study provides the first psychometric evidence that the DLOQ undergoes systematic validity degradation in the PTN context, with six items failing to meet the validity threshold. This degradation quantitatively demonstrates that the instrument portability assumption cannot be accepted as axiomatic within public sector institutional contexts. Second, theoretically, the concentration of item validity failure within autonomy-oriented dimensions confirms the presence of an inherited private-sector bias in the original construction of the DLOQ, while simultaneously opening new research avenues concerning the interaction between national cultural dimensions and the validity of learning organization instruments. Third, methodologically, this study produced the DLOQ-PTN, a 14-item learning organization measurement instrument that is valid (AVE = 0.512), reliable (CR = 0.926; CA = 0.926), and free from contextual bias, serving as a standard reference instrument for learning organization research at Indonesian public universities that is ready for replication and further development by future researchers. The paradoxical finding whereby strongly positive descriptive outcomes coexist with systematic psychometric validity degradation demonstrates that perceived learning culture and measured learning capability represent two fundamentally distinct analytical dimensions, a conceptual distinction that had not

previously been quantitatively established within the DLOQ validation literature.

Future research is recommended to replicate the DLOQ-PTN calibration procedure across public universities in various regions of Indonesia using a Multi-Group Analysis (MGA) approach, comparing PTN-BH, PTN-BLU, and PTNs outside Java to ensure psychometric consistency across diverse institutional contexts. Future studies are additionally encouraged to explore DLOQ portability within non-PTN public sector institutions such as local governments, state-owned enterprises, or government ministries, to determine whether the item failure patterns identified are PTN-specific or represent a broader phenomenon within Indonesia's public bureaucracy, ultimately yielding a comprehensive map of DLOQ non-portability across various bureaucratic ecosystems. Finally, future research employing grounded theory or in-depth qualitative exploration would make a more fundamental contribution to developing a learning organization measurement instrument that is authentically contextual to Indonesia's public sector (Watkins & Kim, 2017; Alerasoul et al., 2022).

Several limitations of this study warrant acknowledgment. First, generalizability is constrained to a single PTN-BH research setting. As PTN-BH institutions are characterized by relatively greater operational flexibility compared to other public university categories such as PTN-BLU and PTN-Satker, the findings may not fully capture the diversity of public university contexts across Indonesia. Replication across public universities with more varied bureaucratic profiles is therefore necessary before the DLOQ-PTN can be claimed as a universally applicable instrument for all Indonesian public universities. Second, as a psychometric validation study based predominantly on a cross-sectional design, the findings represent a single point in time within the dynamic trajectory of instrument validity. Psychometric validity may shift as public universities undergo ongoing institutional transformation; accordingly, the stability of the instrument's validity profile should be substantiated through longitudinal studies capable of providing a more accurate assessment of DLOQ-PTN stability over time. Third, this study modified an existing instrument rather than developing one that is genuinely indigenous to the Indonesian public bureaucratic context. The DLOQ-PTN remains grounded in the seven-dimensional framework of Marsick & Watkins (1996; 2003), which was originally designed for private sector organizations.

REFERENCES

- Adler, N., & Docherty, P. (1998). Bringing business into sociotechnical theory and practice. *Human Relations*, 51(3), 319–345.
<https://doi.org/10.1023/A:1016996504881>
- Alerasoul, S. A., Afeltra, G., Hakala, H., Minelli, E., & Strozzi, F. (2022). Organisational learning, learning organisation, and learning orientation: An integrative review and framework. *Human Resource Management Review*, 32(3), 1–26.
<https://doi.org/10.1016/j.hrmr.2021.100854>
- Anand, A., & Brix, J. (2022). The learning organization and organizational learning in the

- public sector: A review and research agenda. *The Learning Organization*, 29(2), 129–156. <https://doi.org/10.1108/TLO-05-2021-0061>
- Argyris, C., & Schon, D. A. (1978). *Organizational Learning: A Theory of Action Perspective*. Addison-Wesley.
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36(3), 421–458.
- Benitez, J., Henseler, J., Castillo, A., & Schuberth, F. (2020). How to perform and report an impactful analysis using partial least squares: Guidelines for confirmatory and explanatory IS research. *Information & Management*, 57(2), 103168. <https://doi.org/10.1016/j.im.2019.05.003>
- Bui, H. T. M., & Baruch, Y. (2012). Learning organizations in higher education: An empirical evaluation within an international context. *Management Learning*, 43(5), 515–544. <https://doi.org/10.1177/1350507611431212>
- Cousins, J. B., Goh, S. C., Elliott, C., Aubry, T., & Gilbert, N. (2014). Government and voluntary sector differences in organizational capacity to do and use evaluation. *Evaluation and Program Planning*, 44, 1–13. <https://doi.org/10.1016/j.evalprogplan.2014.01.002>
- Cyert, R. M., & March, J. G. (1963). *A Behavioral Theory of the Firm*. Prentice-Hall.
- Dekoulou, P., & Trivellas, P. (2014). Measuring the impact of learning organization on job satisfaction and individual performance in Greek advertising sector. *Procedia: Social and Behavioral Sciences*, 175, 367–375. <https://doi.org/10.1016/j.sbspro.2015.01.1212>
- Dhananjaya, D. N., & Gamlath, S. (2013). Learning organization dimensions of the Sri Lanka Army. *The Learning Organization*, 20(3), 195–215. <https://doi.org/10.1108/09696471311328451>
- Farrell, M. A., & Oczkowski, E. (2002). Are market orientation and learning orientation necessary for superior organizational performance? *Journal of Market-Focused Management*, 5(3), 197–217. <https://doi.org/10.1023/A:1019519824126>
- Ferguson, S., Burford, S., & Kennedy, M. (2013). Divergent Approaches to Knowledge and Innovation in the Public Sector. *International Journal of Public Administration*, 36(3), 168–178. <https://doi.org/10.1080/01900692.2012.749278>
- Fiol, C. M., & Lyles, M. A. (1985). Organizational learning. *Academy of Management Review*, 10(4), 803–813. <https://doi.org/10.2307/258048>
- Garvin, D. A. (1993). Building a learning organization. *Harvard Business Review*, 71(4), 78–91.
- Garvin, D. A. (2003). *Learning in Action: A Guide to Putting the Learning Organization to Work*. Harvard Business School Press.
- Goh, S. C. (2019). Organizational learning and job satisfaction: An analysis of a Canadian federal government department. *International Journal of Public Administration*, 42(2), 103–114. <https://doi.org/10.1080/01900692.2018.1428337>
- Goh, S. C., Elliott, C., & Quon, T. K. (2006). The relationship between learning capability and organizational performance: A meta-analytic examination. *The Learning Organization*, 19(2), 92–108. <https://doi.org/10.1108/09696471211201461>
- Goh, S. C., & Richards, G. (1997). Benchmarking the learning capability of organizations. *European Management Journal*, 15(5), 575–583. [https://doi.org/10.1016/S0263-2373\(97\)00036-4](https://doi.org/10.1016/S0263-2373(97)00036-4)

- Goula, A., Stamouli, M. A., Stavroulakis, D., Kyriakidou, N., & Siskou, O. (2020). Validation of dimensions of learning organization questionnaire (DLOQ) in health care setting in Greece. *Healthcare*, 8(4), 573. <https://doi.org/10.3390/healthcare8040573>
- Gregor, S., & Hevner, A. R. (2013). Positioning and presenting design science research for maximum impact. *MIS Quarterly*, 37(2), 337–355. <https://doi.org/10.25300/MISQ/2013/37.2.01>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Harrison, G. L., & Baird, K. M. (2014). The organizational culture of public sector organisations in Australia. *Australian Journal of Management*, 40(2), 292–316. <https://doi.org/10.1177/0312896213505095>
- Hatch, M. J., & Cunliffe, A. L. (2013). *Organization Theory: Modern, Symbolic, and Postmodern Perspectives* (3rd ed.). Oxford University Press.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, 28(1), 75–105. <https://doi.org/10.2307/25148625>
- Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science*, 2(1), 88–115. <https://doi.org/10.1287/orsc.2.1.88>
- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20(2), 195–204. [https://doi.org/10.1002/\(SICI\)1097-0266\(199902\)20:2<195::AID-SMJ13>3.0.CO;2-7](https://doi.org/10.1002/(SICI)1097-0266(199902)20:2<195::AID-SMJ13>3.0.CO;2-7)
- Ionescu, C. A., Ionescu, A., Tudorache, F., Gutu, C., Anghel, L. T., Zamfir, A. E., & Oncioiu, I. (2019). Investigating the dimensions of learning organizations questionnaire (DLOQ) in a Romanian private ophthalmology organization. *Healthcare*, 7(1), 33. <https://doi.org/10.3390/healthcare7010033>
- Ju, B., Chen, Z., & Zheng, J. (2021). Building a learning organization in the context of China's public sector: The role of DLOQ. *The Learning Organization*, 28(4), 394–411. <https://doi.org/10.1108/TLO-01-2020-0007>
- Kim, J., Egan, T., & Tolson, H. (2015). Examining the dimensions of the learning organization questionnaire: A review and critique of research utilizing the DLOQ. *Human Resource Development Review*, 14(1), 91–112. <https://doi.org/10.1177/1534484314555402>
- Kim, S. H., & Kim, S. (2016). National culture and social desirability bias in measuring public service motivation. *Administration & Society*, 48(4), 444–476. <https://doi.org/10.1177/0095399713498749>
- Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, 28(1), 227–261. <https://doi.org/10.1111/isj.12131>
- Kortsch, T., Paulsen, H., & Kauffeld, S. (2019). Validation of a German version of the dimensions of the learning organization questionnaire (DLOQ) in German craft companies. *Zeitschrift für Arbeits-und Organisationspsychologie*, 63, 15–31. <https://doi.org/10.1026/0932-4089/a000282>

- Kwak, D. H., Shim, H., & Kim, S. (2021). Detection and reduction of social desirability bias in information systems research. *Information & Management*, 58(7), 103500. <https://doi.org/10.1016/j.im.2021.103500>
- Lenart-Gansiniec, R., & Sułkowski, Ł. (2020). Organizational learning and value creation in local governance: The mediating role of crowdsourcing. *The Learning Organization*, 27(4), 321–335. <https://doi.org/10.1108/TLO-12-2018-0213>
- Leufvén, M., Vitrakoti, R., Bergström, A., Kc, A., & Målqvist, M. (2015). Dimensions of Learning Organizations Questionnaire (DLOQ) in a low-resource health care setting in Nepal. *Health Research Policy and Systems*, 13(1), 6. <https://doi.org/10.1186/1478-4505-13-6>
- Marquardt, M. J. (2002). *Building the Learning Organization: Mastering the Five Elements for Corporate Learning* (2nd ed.). Davies-Black Publishing.
- Marsick, V. J. (2013). The dimensions of a learning organization questionnaire (DLOQ) introduction to the special issue examining DLOQ use over a decade. *Advances in Developing Human Resources*, 15(2), 127–132. <https://doi.org/10.1177/1523422313475984>
- Marsick, V. J., & Watkins, K. E. (1996). Adult educators and the challenge of the learning organization. *Adult Learning*, 7(4), 18–20. <https://doi.org/10.1177/104515959600700>
- Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: The dimensions of the learning organization questionnaire. *Advances in Developing Human Resources*, 5(2), 132–151. <https://doi.org/10.1177/1523422303005002002>
- Mujahidin, M., & Kusuma, F. K. (2025). Redesigning bureaucracy as a governmental strategy for enhancing public service effectiveness. *Society*, 13(1), 803–817. <https://doi.org/10.33019/society.v13i1.766>
- Ndraha, T. (2005). *Teori Budaya Organisasi*. Rineka Cipta.
- Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology*, 15, 263–280. <https://doi.org/10.1002/ejsp.2420150303>
- Oosthuizen, R. M., & Pretorius, M. (2016). Design science research and its application in human resource management. *SA Journal of Human Resource Management*, 14(1), 1–10. <https://doi.org/10.4102/sajhrm.v14i1.763>
- Panayides, P. (2007). The impact of organizational learning on relationship orientation, logistics service effectiveness and performance. *Industrial Marketing Management*, 36(1), 68–80. <https://doi.org/10.1016/j.indmarman.2006.03.006>
- Pasmore, W. A., Francis, C., Haldeman, J., & Shani, A. (1982). Sociotechnical systems: A North American reflection on empirical studies of the seventies. *Human Relations*, 35(12), 1179–1204. <https://doi.org/10.1177/001872678203501207>
- Rad, D., & Bocos, M. (2024). Rethinking learning organization antecedents in public institutions: A narrative review. *Frontiers in Psychology*, 15, 1389072. <https://doi.org/10.3389/fpsyg.2024.1389072>
- Rashman, L., Withers, E., & Hartley, J. (2009). Organizational learning and knowledge in public service organizations: A systematic review of the literature. *International Journal of Management Reviews*, 11(4), 463–494. <https://doi.org/10.1111/j.1468-2370.2009.00257.x>

- Robbins, S. P. (1990). *Organization Theory: Structure, Design, and Applications* (3rd ed.). Prentice-Hall.
- Senge, P. M. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday.
- Sinkula, J. M., Baker, W. E., & Noordewier, T. (1997). A framework for market-based organizational learning: Linking values, knowledge, and behavior. *Journal of the Academy of Marketing Science*, 25(4), 305–318. <https://doi.org/10.1177/0092070397254003>
- Syahrir, S., Sumarni, S., Murtadho, A., & Malik, M. (2020). Partial least squares-structural equation modeling (PLS-SEM) in social science research. *Journal of Critical Reviews*, 7(19), 67–88.
- Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal*, 24(8), 745–761. <https://doi.org/10.1002/smj.337>
- Trist, E. L. (1981). *The Evolution of Socio-Technical Systems: A Conceptual Framework and an Action Research Program*. Ontario Quality of Working Life Centre.
- Varughese, B., & Rameshkumar, M. (2024). Validation of Dimensions of Learning Organization Questionnaire (DLOQ). *International Journal of Educational Research*, 127, 102416. <https://doi.org/10.1016/j.ijer.2024.102416>
- Vom Brocke, J., Hevner, A., & Maedche, A. (2020). Introduction to design science research. In J. vom Brocke, A. Hevner, & A. Maedche (Eds.), *Design Science Research. Cases* (pp. 1–13). Springer. https://doi.org/10.1007/978-3-030-46781-4_1
- Walker, G. H., Stanton, N. A., Salmon, P. M., & Jenkins, D. P. (2008). A review of sociotechnical systems theory: A classic concept for new command and control paradigms. *Theoretical Issues in Ergonomics Science*, 9(6), 479–499. <https://doi.org/10.1080/14639220701635470>
- Watkins, K. E., & Dirani, K. M. (2013). A meta-analysis of the dimensions of a learning organization questionnaire: Looking across cultures, ranks, and industries. *Advances in Developing Human Resources*, 15(2), 148–162. <https://doi.org/10.1177/1523422313475991>
- Watkins, K. E., & Kim, K. (2017). Current status and promising directions for research on the learning organization. *Human Resource Development Quarterly*, 29(1), 15–29. <https://doi.org/10.1002/hrdq.21293>
- Yang, B., Watkins, K. E., & Marsick, V. J. (2004). The construct of the learning organization: Dimensions, measurement, and validation. *Human Resource Development Quarterly*, 15(1), 31–55. <https://doi.org/10.1002/hrdq.1086>

**Appendix 1. DLOQ-PTN: A Calibrated 14-Item Learning Organization Instrument
for Indonesian Public Higher Education — Beyond Private Sector Assumptions**
(Psychometrically Validated via PLS-SEM | AVE = 0.512; CR = 0.926; CA = 0.926)

No.	Dimension	Item Description (Indicator)	Outer Loading
01	Create Continuous Learning Opportunities	This institution gives everyone flexibility of time and recognition for engaging in learning activities.	0.698
02	Create Continuous Learning Opportunities	People in this institution give input to one another openly and honestly.	0.691
03	Promote Inquiry and Dialogue	People in this institution use every opportunity to build trust with one another.	0.620
04	Encourage Collaboration and Team Learning	Teams/groups in this institution revise their thinking as a result of group discussions or collected information.	0.691
05	Encourage Collaboration and Team Learning	Teams/groups in this institution are confident that the institution will act on their recommendations.	0.819
06	Create Systems to Capture and Share Learning	This institution has a system in place to measure the gap between current and expected performance.	0.692
07	Create Systems to Capture and Share Learning	The overall time and resources spent on training in this institution are measured for their outcomes and benefits.	0.693
08	Empower People Toward A Collective Vision	This institution rewards people who are willing and able to take initiative.	0.759

No.	Dimension	Item Description (Indicator)	Outer Loading
09	Empower People Toward A Collective Vision	This institution supports employees who are willing and able to take well-considered risks.	0.688
10	Connect Organization to Environment	This institution encourages everyone to think from a global perspective.	0.739
11	Connect Organization to Environment	This institution facilitates everyone in obtaining answers from across institutions to solve problems.	0.676
12	Provide Strategic Leadership for Learning	Leaders in this institution mentor and coach the people they lead.	0.734
13	Provide Strategic Leadership for Learning	Leaders in this institution continuously seek opportunities to engage in learning.	0.753
14	Provide Strategic Leadership for Learning	Leaders in this institution ensure that the organization's actions are always consistent with its values.	0.747

Source: SmartPLS 4.0 output (April 2026) All outer loadings > 0.60 (Hair et al., 2022)

Note: DLOQ-PTN is a recalibrated version of the original 20-item DLOQ (Marsick & Watkins, 1996; 2003) adapted by Leufvén et al. (2015), with six items eliminated through systematic outer model evaluation using PLS-SEM. This instrument is contextually validated for use in Indonesian state universities (PTN) as public sector educational institutions and is recommended as a standard reference for future learning organization research in similar institutional contexts