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The impact of district administration leadership characteristics on community resilience: Evidence from Kampong Thom provincial administration in Cambodia

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ABSTRACT

Even though community resilience (CORE) has been studied extensively, scholars have offered different definitions of CORE. The majority of current measures and tools are unable to view CORE in its entirety. The relationship between district administration (DIA) and CORE has not been thoroughly examined in empirical research on CORE assessment methods. Understanding the relationship between several DIA features, including leadership tenure, staff retention, leadership competencies, leadership styles, and CORE measurement, is crucial given DIA's impact on CORE indicators. This study explored the relationship between district administration leadership (DIAL) attributes and CORE levels. The survey was completed by 111 samples. District governors, deputy district governors, and head and deputy heads of office were included in the survey sample. SPSS was used to analyze the collected data using both descriptive and inferential statistics. Distributed leadership was positively correlated with CORE levels but negatively correlated with knowledge scores on the CARL. There was no statistically significant relationship between CORE levels and leadership tenure or declared disaster experience, although there was a weak-to-moderate negative association between CARL self-awareness ratings and CORE levels. When interpreting a holistic CORE assessment, DIAL and staff characteristics should be considered as custodians of community resources and resilience. Research on this subject should pay more attention to the relationship between distributed leadership and CORE.

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1. INTRODUCTION

1.1 Background and Literature Review of Community Resilience

A community is a group of people who share characteristics like location, identity, norms, or values [1], [2]. In order to maintain community resilience (CORE), interdependent

systems must be used to manage resources and safeguard living circumstances (Brousselle et al., 2020). Resilience, however it in defined, is the ability of a community to recover from adversity and return to its initial state [3]. Resilience has been defined by some as the capacity to recover and move on [3], [4], [5], [6]. In contrast to bouncing forward, which implies a level of innovation and refinement that strengthens the original activities, bouncing back implies a return to normalcy but may necessitate a change or reduction in the initial capacity [3]. Instead of focusing solely on returning to normalcy in the face of adversity, this study considered resilience in terms of adaptation, evolution, and improvement. District administration (DIA) executives must adapt, modify, and exhibit evolving behaviors in order to address the problems they confront daily and during emergencies, particularly those involving disaster response.

Depending on how it is used, CORE can be defined in various ways. According to studies [7], [8], [9], [10], [11], [12], [13], [14], [15], CORE is linked to response and adaptation to disruption. Researchers use a variety of perspectives to examine CORE, including inventory frameworks, theoretical approaches, and indicator-driven techniques [16]. Resilience is influenced by several community interdependencies, which can make measuring resilience difficult [17], [13], [15]. [18] claim that "social, institutional, ecologic, and environmental systems" (p. 1104) are all part of CORE [19], [20].

The capacity of a community to adjust and deal with hardship can be predicted by its resilience [21], [22], [13], [23]. According to earlier studies, CORE indicators serve both as causes and as outcomes of CORE [9], [11]. Understanding interrelated effects and processes is facilitated by a whole-community approach to CORE ([17], [18], [19], [20], [12], [13]. The resilience of local governments is influenced by planning and adaptability [24], [25]. [26] highlighted the significance of local capacity building [27]. A community's ability to plan, prepare, respond, and adapt is influenced by several interrelated, complex systems [13]. In order to support community resilience in various ways, district administrations must plan, prepare, respond, and adapt while retaining staff and vital services.

Only a limited picture of community resilience can be obtained by evaluating it without accounting for risks and vulnerabilities [28], [29], [30], [13]. Some community resilience models lack negative resilience characteristics [31], [30], [32] or do not include a thorough risk analysis [30], [12]. Several models of measuring community resilience focus on a single stressor type [16] and disregard improvements or adaptations based on prior events [30], [33]. Other instruments for measuring community resilience either use indices without clear descriptors [15] or fail to provide useful data to enhance community resilience [18], [8]. In addition to providing useful opportunities to enhance community resilience, an analysis of district administration (local government) features may enrich these measurement techniques.

In order to uphold the social compact with residents, DIAs (local government) play a crucial role in the intergovernmental system that divides, shares, and balances obligations [34]. In order to serve its residents, district administrations manage both hard and soft infrastructure, uphold environmental stewardship, and support legislative and policy initiatives [35]. Roughly 70% of counties, parishes, and municipalities in the country are rural [36], [37]. Leaders in district administration make choices and implement plans that

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have a significant impact on their communities. Since some counties have traditional boards of elected commissioners and others have a single elected or appointed person to oversee the area, [37] classified leadership in Cambodia as generally mixed. However, in order to monitor day-to-day operations on behalf of the commissioner or commissioners, frontline management sometimes falls to a district administrator or other compensated county job.

Both acute and chronic shocks start and finish locally. These shocks have detrimental effects on every aspect of communities [36], [38], and communities develop organizational culture and institutional mechanisms to meet citizens' requirements [37]. As a result, district administrations experience the most disruptions during the shock stages. While crisis and disaster management play crucial roles during unanticipated events, community resilience needs to develop foundational skills that support generalized positive resilience traits, rather than just planning for known threats or hazards [36], [38], [37].

Because communities are interrelated, CORE is influenced by a variety of partners and sectors. Leaders of district administration and their employees form alliances and find solutions to issues. Public governance has been approached from various perspectives throughout the development of public management theory; however, the new public management model is the form of governance that best fosters community resilience through the creation of public-private partnerships, innovation, and entrepreneurialism [39], [40], [41]. In particular, the new model is supported by network development, the shift from hierarchical control to influence, and public-private resource sharing [42]. Additionally, public governance is promoted by cross-sector collaborations, pragmatic operations, and citizen engagement [39], which facilitates community resilience [41]. Network and partnership building, problem solving, resource coordination, shared learning, and accelerated disaster recovery are all facilitated by collaborations across governance and public management [43], [44], [45], [46], [41], [47], [48], [49], [50], [51], [52]. By applying responsible leadership qualities, DIA leaders have an impact on these components, highlighting the significance of assessing DIAL traits and how they relate to CORE.

1.2 Current Research Gaps

The relationship between DIAL tenure, leadership styles, and staff retention and CORE has been overlooked in the research to date. Despite the potential impact of these factors on CORE, there is a dearth of empirical studies. Public administrators are primarily responsible for understanding and mitigating the harmful effects of disrupted homeostasis in communities [41], [53]. The relationships between other DIA metrics, CORE levels, and DIAL traits need further investigation. In order to improve resilience, it is crucial to comprehend the relationship between DIA and CORE as a potentially controllable element.

According to [54], the development of CORE research highlights the subjectivity of resilience, as well as in dynamic impacts and adaptive abilities. To comprehend the development of universal resilience for a variety of threats, resilience-promoting capacities require further investigation [55], [56], [54], [57. Gaining greater knowledge about public management and socio-ecological systems improves comprehension of maintaining equilibrium through resilience and complex systems [38], [37].

Unfortunately, DIAL tenure, leadership characteristics, leadership styles, and staff retention have not been discussed in the existing research on CORE. One could argue that current methods for measuring CORE have overlooked the link between these aspects and CORE. There is a need for more investigation.

1.3 Purposes of the study

This study has two central foci: (i) it examines the extent to which district administration leadership (DIAL) is related with community resilience (CORE) of One Window Service Offices (OWSO) in Kampong Thom Provincial Administration, Cambodia; and (ii) it investigates the relationship between DIAL tenure and experience, DIAL style, and DIA staff retention rates and CORE levels of OWSO in Kampong Thom Provincial Administration, Cambodia.

1.5 Research Hypotheses

To address the extent to which DIAL impacts CORE of OWSO in in Kampong Thom Provincial Administration, Cambodia, the study explored the following hypotheses:

H1: A positive relationship exists between DIAL tenure and CORE levels.

H2: A positive relationship exists between DIA leaders' emergency/disaster response experience and CORE levels.

H3: DIAL style is associated with CORE levels.

H4: Distributive leadership is positively associated with higher scores on the Competency Assessment of Responsible Leadership (CARL).

H5: CARL scores for DIA leaders correlate with CORE levels.

H6: A relationship exists between DIAL style and staff retention rates.

2. METHODS

In addition to describing the research methodology, this section provides information on the research design, the study's samples, data-gathering techniques, and data sources. The demographic Qualtrics survey questions, the Competency Assessment of Responsible Leadership (CARL) instrument, and the community resilience (CORE) survey assessment are also described in this section. It also discusses ethical issues and describes the data analytic tools used to investigate each hypothesis.

2.1 Research Design

Using a quantitative research approach, this study examined the relationship between leadership style, disaster-response experience, leadership characteristics, and staff retention (independent variables) and CORE (dependent variable). A comprehensive evaluation of the literature on CORE and leadership determined the scope of this study. The analysis found very little literature particularly addressing the role DIA officials play in fostering CORE, and no comparable studies were found. This study's scope was restricted to DIA leaders in the Kampong Thom Provincial Administration, Cambodia, at the time the study was administered. An online electronic survey conducted via the Qualtrics platform was used to gather primary quantitative data. The survey's questions centered on a participant's

leadership background, traits, and tasks accomplished while working for the county government. Additionally, secondary data was collected from population demographics and community resilience indicators. The survey procedure included a leadership competency evaluation that had already been validated.

2.2 Research Samples

Only DIA leaders who were employed in the Kampong Thom Provincial Administration, Cambodia, at the time the current study was administered (September 2025) were included in the sample. The Kampong Thom Provincial Administration provided the list of district administrators. An invitation to participate in the study, along with a link to the survey, was sent to 125 contacts. 111 samples in all fully completed the survey and were included in the information gathered. District governors, deputy district governors, and head and deputy heads of offices were included in the survey sample.

2.3 Research Instruments and Data Collection Procedures

2.3.1 Demographic Qualtrics Survey

The first data-gathering instrument was a 10-question Qualtrics survey. Age, gender, and position, for example, were not included in the survey's initial section, but some demographic data were gathered in the CARL section. The first Qualtrics survey focused in DIA experience, declared catastrophe response, job experience, leadership style, and staff retention.

The sample was then asked to affirm their eligibility to participate in DIA. The samples were chosen for the DIA of service. Both years of service in a DIAL role and years of service in any DIA post were recorded in the survey. In contrast to disaster response in a leadership role, the study recorded leaders' reactions to declared catastrophes in any capacity.

The survey's leadership style section, adapted from Morris (2019), asked participants how frequently they used each leadership style. After that, the poll examined employee characteristics and collected data on the number of full-time employees at the start and end of 2025, as well as any new hires made during that year. These questions produced the information required to determine full-time equivalent retention rates. The survey then collected the linkage data (first and last names, email addresses, and consent) needed to compare Qualtrics survey responses with CARL tool responses. The first section of the leadership survey ended with a thank-you note for taking part, permission to share the CARL survey results, and a clickable link to the CARL tool.

2.3.2 CARL Survey Tool

The CARL survey tool was created in support of the Sustainable Development Goals (SDGs) and to foster more conscious leadership through a partnership between business and education [58]. According to [58], the CARL tool "is used to assess stakeholder engagement, individual and group leadership development and internal sustainable development transformation work" (p. 2254). According to [59], responsible leadership aims to have a

good impact on society as a whole by combining interdependency knowledge, stakeholder relationship-building techniques, and ethics and values [60].

The features of DIA leaders are directly correlated with the leadership attributes measured by the CARL instrument. Stakeholder interactions, ethics and values, self-awareness, systems thinking, and change and innovation are all evaluated by the CARL instrument [59], [58]. According to several academics, these leadership characteristics are crucial and function as sub-competencies of responsible leadership [58].

For each level of mastery (i.e., knowing/knowledge, doing/skills, and being/attitudes) for the five competency dimensions (i.e., stakeholder relations, ethics and values, self-awareness, systems understanding, and change and innovation [60] the CARL tool assigns a score for responsible leadership between zero and 100. According to [60], college student piloting was the primary method used to establish the validity and reliability of the CARL instrument. In this study, leadership competencies of survey participants were measured using the CARL instrument.

2.3.3 CORE Survey Assessment

The CORE survey assessment for this study was primarily adapted from the University of South Carolina's Baseline Resilience Index for Community Data, which assigns community resilience indicators to social, economic, community, institutional, housing, infrastructure, and environmental capitals. Community resilience was determined for each county in Georgia, USA.

Given its importance, the research instruments required translation from English to Khmer and back to English for comparison. The Qualtrics, CARL, and CORE surveys were translated in Khmer. The Cronbach's alphas for the current study were 0.81, 0.88, and 0.89 for Qualtrics, CARL, and CORE, respectively.

2.4 Data Analysis and Statistical Procedures

Data analysis was done using SPSS (version 30), a statistical program. Data from the Qualtrics and CARL surveys were combined after the surveys were administered. The only surveys combined were those that permitted participation in CARL and the sharing of findings. Survey responses were combined using first and last names, email addresses, and CARL survey consent. Based on the DIA's name, the CORE-OWSO index was adapted from the University of South Carolina's Baseline Resilience Index for Community Data, which was added. Correlation analysis was performed to determine the extent to which these two variables move together, or are related, in to find a numerical value reflecting the relationship between the three variables.

The Shapiro-Wilk test was used in SPSS to assess whether the variables were normally distributed. It was verified that variables with a significance level of >/= 0.05 were normally distributed. Variables were found to deviate from a normal distribution if their significance level was less than 0.05. Consequently, a nonparametric correlation test was necessary to assess the statistical relationship between variables that were not normally distributed.

The Pearson product-moment correlation test evaluated the statistical correlation between normally distributed study variables. Relationships between variables that did not

pass the Shapiro-Wilk test for normal distribution were assessed using Spearman's rho correlation coefficient. Several statistical hypotheses were applied using SPSS, as shown in Table 1.

Table 1. Data Analysis and Statistical Procedures for Each Hypothesis

Hypothesis		Statistical Procedures
H1:	A positive relationship exists between DIAL tenure and CORE levels.	Pearson product-moment correlation coefficient
H2:	A positive relationship exists between DIA leaders' emergency/disaster response experience and CORE levels.	Pearson product-moment correlation coefficient;
H3:	DIAL style is associated with community resilience levels.	Spearman's rho correlation coefficient
H4:	Distributive leadership is positively associated with higher scores on the Competency Assessment of Responsible Leadership (CARL).	Spearman's rho correlation coefficient
H5:	CARL scores for DIA leaders correlate with CORE levels.	Spearman's rho correlation coefficient
H6:	A relationship exists between DIAL style and DIA staff retention rates.	Spearman's rho correlation coefficient

3. RESULTS

3.1 Findings of Correlation between DIAL Tenure and CORE

This section presents the findings for hypothesis 1. Hypothesis 1 stated that a positive relationship exists between district administration leadership (DIAL) tenure and community resilience (CORE) level. In theory, stable leadership supports relationship building and improved management skills. Additionally, experience in a DIAL role facilitates communication and garners support from staff and stakeholders. All these factors contribute to increased CORE.

Table 2. Correlation of DIAL Tenure and CORE (n=111)

Item	M	S.D.	Pearson Correlation	Sig. (1-tailed)	Lower CI (95%)	Lower CI (95%)
One Window Service CORE	2.52	0.10	0.05	0.24	-	-
Years in DIAL	10.20	6.85	0.05	0.24	-0.07	1.00

As shown in Table 2, given the assumed positive relationship between DIAL tenure and CORE, a one-tailed Pearson product-moment correlation coefficient was used to assess the relationship between the two variables. A Pearson r of 0.05 with a significance level of 0.24 was determined (n = 111). As a result of this research, the data obtained revealed no significant association between DIAL tenure and CORE levels. This hypothesis was rejected.

Table 3. Results of Power Analysis of Hypothesis 1 (n=111)

	Actual Power[b]	Assumption Testing			
		Power	Null	Alternative	Sig.
Pearson Correlation[a]	0.95	0.95	0	0.3	0.05

[a] *One-sided test.*

[b] *Calculated using Fisher's z-transformation and normal approximation with bias adjustment.*

According to the power analysis in Table 3, this statistical test had a power of 95%, and the sample size of 111 exceeded the required level an achieve adequate power. A total of 67 samples would have been required to achieve 80% power and meaningful results at the 0.05 alpha level.

3.2 Findings of Correlation between DIA Leaders' Declared Disaster Experience and CORE

This section provides the findings for hypothesis 2. Managing declared disasters challenges DIA leaders while providing communication, networking, and learning opportunities. The second hypothesis assumes a positive relationship between declared disaster response experience and community resilience.

Table 4. Results of Spearman's Rho Correlation between CORE and Any Declared Disaster Experience (n=111)

Statistics	CORE Index	Declared Disaster Response in Any Role	Lower CI (95%)	Lower CI (95%)
Spearman's Rho Correlation Coefficient	1	0.03	-0.10	1.00
Sig. (1-tailed)	-	0.33		

According to Spearman's rho correlation coefficient in Table 4, there was no statistically significant relationship between the CORE score and stated disaster experience in any capacity (rs = 0.03, Sig (1-tailed), p = 0.33, n = 111).

Table 5. Results of Pearson Correlation between CORE and Declared Disaster Experience as a Leader (n=111)

Variable	Statistics	Declared Disaster Response in Any Role	Lower CI (95%)	Lower CI (95%)
CORE Index	Pearson Correlation	0.10	-0.02	1.00
	Sig. (1-tailed)	0.08		

According to Table 5, the Pearson product-moment correlation coefficient test revealed no significant relationship between reported disaster response experience in a leadership role and CORE (r = 0.10, Sig (1-tailed), p = 0.08, n = 111). As a result of the correlation studies, this hypothesis was rejected for both proclaimed disaster response in a leadership capacity and all stated disaster response experience.

Table 6. Results of Pearson Correlation between CORE and Declared Disaster Experience as a Leader (n=111)

Statistics	Power[b]	Assumption Testing		
		Null	Alternative	Sig.
Spearman Correlation[a]	0.98	0	0.3	0.05

[a] *One-sided test.*

[b] *Calculated using Fisher's z-transformation and normal approximation. The variance estimation is based on the method suggested by [61].*

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Table 7. Results of Pearson Correlation Power Analysis for Hypothesis 2 (n=111)

Statistics	Power[b]	Assumption Testing		
		Null	Alternative	Sig.
Pearson Correlation[a]	0.98	0	0.3	0.05

[a] *One-sided test.*
[b] *Calculated using Fisher's z-transformation and normal approximation.*

According to the power analysis in Tables 6 and 7, the sample size used in the study exceeds the recommended 111 to achieve at least 90% power for either correlation test at the 0.05 alpha level.

3.3 Findings of Correlation between DIAL Style and CORE

This section provides the results for hypothesis 3. Leadership style often shapes relationships between leaders and their staff and influences how leaders manage their responsibilities.

In this study, it was hypothesized that county government leaders' leadership style is related to CORE. More specifically, it was hypothesized that some leadership styles, such as democratic (or participative), transformational, situational, and distributed leadership, are positively associated with community resilience, while authoritarian, authoritative, laissez-faire, and transactional leadership styles are negatively associated with CORE.

Table 8. Results of Correlation Assessment of CORE Index and Leadership Styles (n=111)

Variable	M	S.D.	Spearman's Rho Correlation	Sig. (2-tailed)	Lower CI (95%)	Lower CI (95%)
CORE Indicators	2.55	0.11	1.00	-	-	-
Authoritarian	4.50	10.11	-0.05	0.52	-0.22	0.11
Authoritative	13.65	17.75	-0.05	0.94	-0.17	0.16
Democrative or Participative	23.13	24.45	0.06	0.45	-0.11	0.23
Distributed	10.30	11.01	0.18*	0.03	0.00	0.03
Laisses Fair or Delegative	7.40	8.85	-0.09	0.25	-0.26	0.07
Transformational	10.88	12.38	-0.07	0.36	-0.24	0.09
Transactional	4.21	7.97	-0.15	0.06	-0.32	0.01
Situational	14.96	23.30	0.01	0.86	-0.15	0.18
Servant	10.98	12.85	-0.02	0.86	-0.20	0.14

According to Table 8, the Spearman's rho correlation coefficient test revealed a significant association between distributive leadership style and community resilience (rs = 0.18, Sig. (2-tailed), p = 0.03, n = 111). As a result, it was impossible to dismiss this idea. There was a statistically significant correlation between distributed leadership style and CORE.

Table 9. Results of Spearman Correlation Power Analysis for Hypothesis 3 (n=111)

Statistics	Power[b]	Assumption Testing		
		Null	Alternative	Sig.
Spearman Correlation[a]	0.93	0	0.3	0.05

[a] *One-sided test.*
[b] *Calculated using Fisher's z-transformation and normal approximation. The variance estimation is based on the method suggested by [61].*

According to Table 9, the association was positive but had a low level of correlation. The power analysis indicated that the current statistical test had power exceeding 90%.

3.4 Findings of Correlation between Distributed Leadership and CARL Score

This section addresses hypothesis 4, which states that distributive leadership is positively associated with higher scores on the Competency Assessment of Responsible Leadership (CARL). Distributed leadership expands responsibilities across multiple employees within an organization. Distributed leadership relies on strengths and experiences within the organization rather than limiting knowledge and leadership duties to a single individual. Distributed leadership leverages skills from across the organization to foster collective engagement and more robust problem-solving.

Table 10. Results of Correlation Assessment of Distributed Leadership and CARL Score (n=111)

Variable	M	S.D.	Spearman's Rho Correlation	Sig. (1-tailed)	Lower CI (95%)	Lower CI (95%)
Distributed Leadership Style	10.28	11.98	1.00	-	-	-
CARL Stakeholder related % of Max	73.45	12.24	0.23	0.10	-0.09	1.00
CARL Ethics and Value % of Max	75.85	10.95	-0.03	0.43	-1.00	0.28
CARL Self-awareness % of Max	78.77	9.65	-0.00	0.48	-1.00	0.31
CARL Systems Understanding % of Max	77.10	7.87	-0.04	0.40	-1.00	0.27
CARL Change and Innovation % of Max	73.65	15.40	0.06	0.36	-0.26	1.00
CARL Knowledge % of Max	78.95	10.88	-0.47	0.00	-1.00	-0.18
CARL Skills % of Max	71.73	7.60	0.20	0.14	-0.12	1.00
CARL Attitudes % of Max	76.25	9.88	0.14	0.22	-0.18	1.00
CARL Total Score % of Max	75.40	6.75	0.06	0.37	-0.26	1.00

According to Table 10, the Spearman's rho correlation coefficient indicates that distributed leadership has a moderate negative association with CARL ratings for knowledge (r_s = -0.47, Sig. (1-tailed), p = 0.00, n = 111).

Table 11. Results of Spearman Correlation Power Analysis for Hypothesis 4 (n=111)

Statistics	Power[b]	Assumption Testing		
		Null	Alternative	Sig.
Spearman Correlation[a]	0.46	0	0.3	0.05

[a] *One-sided test.*
[b] *Calculated using Fisher's z-transformation and normal approximation. The variance estimation is based on the method suggested by [61].*

According to Table 11 above, features of the CARL scores, including the total CARL score, are not significantly associated with distributed leadership. This test has a power of just 46% due to the tiny sample size. The research hypothesis proposed a favorable relationship between distributed leadership and CARL scores. However, a negative association was observed between distributed leadership and knowledge CARL scores. Therefore, the hypothesis was rejected. However, a statistical link was discovered between leadership and the knowledge component of CARL. A greater sample size may result in

higher power levels and potentially different statistical findings. A sample size of 111 was required to achieve at least 80% power at the 0.05 significance level.

3.5 Findings of Correlation between CORE Levels and CARL Scores

This section presents the results of hypothesis 5. The fifth hypothesis proposed a relationship between CARL scores and CORE levels. Theoretically, DIA leaders with higher CARL scores in specific areas assessed by the CARL tool and a higher total CARL score would positively impact CORE scores.

Table 12. Results of Correlation Assessment of CORE and CARL Score (n=111)

Variable	M	S.D.	Spearman's Rho Correlation	Sig. (1-tailed)	Lower CI (95%)	Lower CI (95%)
CARL Stakeholder related % of Max	73.45	12.25	0.19	0.16	-0.13	1.00
CARL Ethics and Value % of Max	74.85	10.95	0.02	0.47	-0.31	1.00
CARL Self-awareness % of Max	78.75	9.65	-0.31*	0.04	-1.00	0.00
CARL Systems Understanding % of Max	77.10	7.87	0.18	0.06	-1.00	0.03
CARL Change and Innovation % of Max	73.63	15.40	-0.15	0.17	-0.14	1.00
CARL Knowledge % of Max	78.98	10.88	0.19	0.21	-1.00	0.17
CARL Skills % of Max	71.74	7.60	-0.03	0.15	-0.13	1.00
CARL Attitudes % of Max	76.22	9.88	-0.03	0.42	-1.00	0.28
CARL Total Score % of Max	75.44	6.75	-0.03	0.42	-1.00	0.28
CORE	2.55	0.10	1.00	-	-	-

Table 12 shows the results of the Spearman's rho correlation coefficient test, which revealed a correlation between the CARL's self-awareness measurement and CORE levels (r_s = -0.31 Sig. (1-tailed), p = 0.04, n = 111). No other CARL evaluation categories showed a statistically significant association with CORE levels.

Table 13. Results of Spearman Correlation Power Analysis for Hypothesis 5 (n=111)

Statistics	Power[b]	Assumption Testing		
		Null	Alternative	Sig.
Spearman Correlation[a]	0.46	0	0.3	0.05

[a] *One-sided test.*
[b] *Calculated using Fisher's z-transformation and normal approximation. The variance estimation is based on the method suggested by [61].*

Based on Table 13, hypothesis 5 could not be rejected because there were statistically significant, weak-to-moderate negative associations for self-awareness at the 0.05 level. However, because of the limited sample size, the test's power was only 46%.

3.6 Findings of Correlation between DIAL Style and Staff Retention Rates

This section presents the results for hypothesis 6. Hypothesis 6 stated that DIAL style correlates with full-time equivalent staff retention rates.

Table 14. Results of Staff Retention Rate Correlation Assessment with Leadership Style

Variable	M	S.D.	Spearman's Rho Correlation	Sig. (2-tailed)	Lower CI (95%)	Lower CI (95%)
Authoritarian	4.60	10.11	-0.12	0.24	-0.33	0.09
Authoritative	13.65	17.75	-0.01	0.86	-0.23	0.19
Democrative or Participative	23.13	24.45	0.07	0.49	-0.14	0.28
Distributed	10.30	11.99	0.16	0.11	0.04	0.36
Laisses Fair or Delegative	7.40	8.85	0.07	0.49	-0.14	0.28
Transformational	10.88	12.38	0.19	0.06	-0.02	0.39
Transactional	4.20	7.97	0.06	0.55	-0.15	0.27
Situational	14.96	23.30	-0.09	0.75	-0.24	0.18
Servant	10.98	12.85	0.03	0.39	-0.12	0.30
Staff Retention Rate	93.20	12.01	1.00	-	-	-

According to the Spearman's rho correlation coefficient test results in Table 14 above, there was no statistically significant relationship between staff retention rates and leadership style. However, [61] discovered a link between authoritarian leadership and employee attrition.

Table 15. Results of Spearman Correlation Power Analysis for Hypothesis 6 (n=111)

Statistics	Power[b]	Assumption Testing		
		Null	Alternative	Sig.
Spearman Correlation[a]	0.80	0	0.3	0.05

[a] *One-sided test.*
[b] *Calculated using Fisher's z-transformation and normal approximation. The variance estimation is based on the method suggested by [61].*

As indicated in Table 15, the power analysis for this test indicates that the sample size is acceptable for 80% power at the 0.05 significance level.

4. DISCUSSION

4.1 Discussion of Distributed or Shared Leadership

This study discovered several statistically significant relationships, including a low-to-moderate, positive correlation between distributed or shared leadership and community resilience, and between distributed leadership and self-reported percentages of time distributed leadership styles were used. This can be explained by the framework of creating robust public administration organisations in Cambodia that incorporate all administrative levels. This aligns with [63], which was referenced in distributed leadership [64]. According to [65], distributed leadership among county government officials is consistent with CORE enhancement through strong, redundant, and speedy resources [66].

The relationship between distributed leadership and community resilience identified in this study is supported by the fact that distributed leadership acts as a force multiplier for knowledge, skills, and problem-solving. In the wake of the new public management

movement, [67] cited several reports on shared or distributed leadership. Particularly, agency cooperation makes it easier for collaborating agencies to solve problems. Interagency cooperation is made possible by distributed leadership in public organisations [68], [67], [69]. The growth of networks influences resilience, the shift from hierarchical control to influence, and the sharing of public and private resources [42].

4.2 Discussion of CARL Instrument

The study revealed that the knowledge element of the CARL instrument correlated negatively with distributed leadership. This finding contradicted the study hypothesis, which predicted a positive relationship between distributed leadership and all CARL scores. In light of that, [58]'s CARL tool uses a responsible leadership grid that combines five competency dimensions—stakeholder relations, ethics and values, self-awareness, systems thinking, and change and innovation—with three action domains—knowing/knowledge, doing/skills, and being/attitudes—adapted from [70], [71]. With an emphasis on sustainable development, the CARL instrument was first created to assess responsible leadership in various industries. However, evaluating government officials' leadership skills may also benefit from the CARL tool. According to [72], community resilience must take knowledge considerations into account. Additionally, [72] found a relationship between knowledge and community resilience, which calls for more investigation.

4.3 Discussion of Staff Retention and Leadership Style

The study found no statistically significant association between leadership style and staff retention. Many factors, such as society and the environment, influence the Cambodian working context. To align with these factors, [73] highlighted the social, psychological, and physical aspects of employee retention. Although several studies have shown a positive relationship between transformative leadership and employee retention [74], [75], this study found no statistically significant relationship between employee retention and the leadership styles examined. Although prior research has demonstrated a relationship between authoritarian leadership and employee turnover intention [62], this study failed to find a statistically significant relationship.

4.4 Discussion of Leadership Tenure and CORE

Based on the study's findings, although there was no statistically significant correlation between CORE levels and leadership duration in this study, many experts believe that resilient communities and leadership tenure are related. Also, it can be caused by the fact that local leaders in Cambodia develop networks and increase knowledge through experience and years of service, thereby strengthening community resilience. For instance, [76] highlighted the significance of local municipal leaders' understanding of community needs and local relationships as drivers of community resilience. Furthermore, local government officials use administrative services and policy efforts to represent their residents [76] .Through tenure and experience, local leaders gain knowledge of their communities and create projects that help them. Through collaboration, civic participation,

transparency, and relationship building, leadership tenure also promotes community resilience [77].

4.5 Discussion of Declared Disaster Experience and CORE

The result of this study showed that there was no statistically significant correlation between the variables, despite the study's hypothesis that announced disaster response experience and CORE were related. This finding could be explained by the fact that both acute shocks and chronic stressors continue to test communities' resilience in Cambodia. In line with loop learning as outlined by [78], [79], [80] proposed that experience and shared memory improve community resilience. [79] stressed that in order to strengthen resilience proactively through learning, policymakers must foresee possible risks and related uncertainty. The current study did not find a significant association, despite many scholars emphasising the role of disaster learning in enhancing CORE.

5. CONCLUSION

This study discovered several statistically significant relationships, including a low-to-moderate, positive correlation between distributed or shared leadership and CORE, and self-reported percentages of time distributed leadership styles were used. However, there was a negative link between distributed leadership and the CARL tool's knowledge portion. Also, there was no statistically significant association between the term of DIAL and CORE. In addition, no statistically significant associations were found between community resilience and reported disaster experience, or between leadership style and staff retention. This study discovered a link between community resilience and distributed leadership. There is a social component to this important discovery. Local government officials establish horizontal collaborations with peers in accordance with [81]'s idea of administrative conjunction [82]. By assigning leadership duties to their employees, county government officials can increase community resilience by utilising both internal and external networks. This is known as distributed or shared leadership. Through networking, distributed leadership enables adaptive capacities. Self-awareness in DIA leaders shows their capacity for introspection and aids in their comprehension of how others see them.

This current study has significant implications at the theoretical and practical levels. Theoretically, communities develop resilience through learnt responses to difficulties [34], [35], [83]. Resilient traits are developed through adaptive community functioning after shocks and stressors [83]. Additionally, [75] emphasised the significance of official and informal networks, as well as their effects on social organisation, which have a favourable impact on the degree of community resilience. Community capability is influenced by collaborative competence and shared accountability. Practically, the key linkages between distributed leadership and community resilience are supported by shared accountability and common competence. Social organization theory has a beneficial impact on CORE levels, as seen by DIA leaders' capacity to create community networks and communities' capacity for social organization. The current study examined only one aspect of the relationship between CORE and social organization theory, despite finding a statistically significant association between distributed leadership and CORE. Theoretically and practically, CORE

theory promotes community capacity building, whereas DIAL enhances it. DIA leaders can influence both internal and external interactions through informal and formal networks.

Several limitations of this research study should be noted. First, this study was confined to finding out the impact of district administration leadership characteristics on community resilience in the Kampong Thom provincial administration in Cambodia, with 111 research samples included in this study. Second, only the Qualtrics survey questions were simple and approved by a subject-matter expert in DIAL; they were not tested with DIA officials prior to survey administration. This may have been a drawback of the study, but the survey responses were consistent with those of valid respondents. In the final third, the Qualtrics study asked participants to allocate a proportion of their time to each leadership style. Despite explicit directions, people who did not read and analyze the information provided may have misunderstood leadership style definitions. Leadership style statistics could potentially have been distorted if participants misinterpreted the styles or did not apply the leadership style definitions. The situational leadership option could have encompassed numerous leadership styles, potentially skewing the analysis.

To the best of this study's knowledge, this is the first study to evaluate the leadership skills of DIA leaders in the Cambodian context by using the CARL instrument. Research on how regional variations in DIA skills could be obtained by administering the CARL tool to DIA leaders more widely throughout Cambodia. Additionally, a more comprehensive study that would increase the study population to enable more accurate comparisons of geographic leadership is needed. In particular, leadership styles and CORE in different metropolitan regions as opposed to rural areas should be examined in future studies. Beyond the results of this study on self-awareness, it would be worthwhile to investigate whether other leadership styles are related to CORE.

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