

## **Contingent Educational Management Response: The Construction and Validation of Leadership Scale in the Era of Change**

Jerry A. Azucena Jr.\*<sup>1</sup>, Ma. Janet S. Geroso<sup>2</sup>, Guarin S. Maguate<sup>3</sup>

<sup>1</sup>*Department of Education*

*Curriculum Implementation Division, Public School District Supervisor, Philippines*

<sup>2</sup>*Northern Negros State College of Science and Technology*

*CIMD Chair, Ph.D. and MAED Program Coordinator, Philippines*

<sup>3</sup>*Department of Education*

*Science Teacher, Philippines*

*\*Correspondence*

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**Abstract:** This study aimed to develop and validate the Leadership in the Era of Change - Scale (LEC-Scale) specifically designed for school administrators of public secondary schools. The LEC-Scale demonstrated high acceptability, content validity, and excellent internal consistency, indicating its reliability and consistency in measuring various aspects of educational management response, including communication and interaction, human-centric educational management response, adaptability, planning and delivery, personal and professional growth, and decision-making. The study also conducted a contrast group analysis, which showed no significant difference between two groups of teachers regarding communication and interaction but significant differences in their response to adaptability, personal and professional growth, and decision-making, with one group scoring higher in these areas. These findings highlight the importance of considering different factors that may influence how teachers respond to changes and challenges in their profession. This study provides valuable contributions to the field of educational leadership, offering a reliable and valid instrument for measuring leadership capability in the current extraordinary situation. It is recommended that the LEC-Scale be used for measuring educational leadership capability, utilizing it as a tool for assessing leadership capability, assessing teachers' leadership capability, identifying areas for improvement, and exploring the relationship between leadership capability and other variables. Future studies can use the LEC-Scale to assess leadership capability in other educational settings and contexts.

**Keywords:** Leadership scale, contingent educational management response, educational leadership capability, scale construction, scale validation.

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### **Introduction**

Effective school administrators are expected to provide strong leadership that not only enhances the overall productivity of the school but also prioritizes the needs of teachers, staff, and students. Studies have shown that leadership behaviors that focus on productivity and people are strongly associated with higher organizational productivity (Balbuena et al., 2020). School leadership during academic challenges requires new strategies and forecasting in an unpredictable environment. It is essential to recognize that different leadership skills are needed. Old mindsets and thinking styles may need to be more effective in the current situation (Ancho, 2020). In the Philippine education system context, the Department of Education (DepEd) has faced significant challenges due to the pandemic, putting its administrators' resilience and innovative mindset to the test (Ancho, 2021). To address these challenges and ensure that basic education students and educators can continue their learning journey in a safe and secure environment, the DepEd introduced the Basic Education - Learning Continuity Plan (BE-LCP). Implementing this plan demonstrates the DepEd's commitment to providing quality education to all students, even in adversity. Various stakeholders were surveyed in a public secondary school to gather their perspectives on implementing distance learning. Among the stakeholders, parents expressed concerns about their children's learning continuity during this transition. Teachers reported that effective leadership from school administrators played a crucial role in addressing crisis-related issues and finding solutions.

### **Methods**

**Research Design:** This study employed a developmental research design. The instrument development process involved two major phases: Development phase and Evaluation Phase. This research was carried out systematically to develop a valid and reliable scale. Understanding the key steps involved in creating a high-quality instrument is essential. The following phases are involved in scale development: item pool generation, content validation, field test of the instrument, the establishment of internal consistency, and construction of the final instrument. The following phase involves the evaluation phase: determining the user acceptability level and contrast group analysis.

**Respondents of the Study:** The study involved four distinct groups of participants who played specific roles in developing and assessing the validity and reliability of the Leadership Scale for measuring educational management response to change. The first group included public secondary school principals. Their perceptions and management responses during the specified period were explored to generate the item pool for the leadership scale. The second group consisted of experts responsible for determining the content validity of the scale. They identified key components and assessed the instrument's acceptability. The third group comprised public secondary teachers. They provided data to assess the scale's reliability and acceptance among end-users. The fourth group included public secondary teachers from different districts. Their responses were used to evaluate the instrument's construct validity through contrast group analysis.

### **Research Instruments**

The study utilized two research instruments: the Lawshe Validation tool and the Instrument Acceptability tool. A panel of nine (9) experts, including educational management professionals and researchers, used the Lawshe Validation tool to determine the content validity ratio (CVR) of the LEC-Scale. By assessing the significance and relevance of each component, the panel ensured that the instrument measured what it intended to measure. The Lawshe Validation tool helped to establish the validity and effectiveness of the LEC-Scale in measuring the constructs related to educational management response to change. Next, public secondary school teachers currently employed in several schools during academic year 2020 were involved in data collection to assess the reliability and level of acceptance of the Leadership Scale. The Instrument Acceptability tool was used to evaluate their willingness and comfort in answering the questions in the scale. It played a crucial role in ensuring that the participants were at ease and willing to respond, enhancing the overall quality of the collected data.

**Validity of the Developed Material:** Content validation was conducted in the study to establish the reliability and validity of the LEC Scale in measuring educational leadership response. A group of experts with relevant academic backgrounds and experience in educational leadership was selected for this phase. The initial draft of the items was evaluated using Lawshe's Content Validity Ratio, which determined the essential and relevant items for the construct being measured. The results were quantitatively analyzed using Lawshe's Content Validation Formula. By conducting this phase, the researcher ensured that the items in the LEC Scale accurately reflected the measured construct and were valid. This is crucial for drawing accurate and reliable inferences about educational leadership response during a crisis.

**Reliability of the Developed Material:** During the field test phase, the Leadership Scale was administered to a group of public secondary school teachers in the specified district.

The internal consistency of the scale was assessed using Cronbach's alpha. According to Bujang et al. (2018), Cronbach's alpha measures the consistency or reliability of a group of items, parameters, or ratings, and predicts the reliability of responses from individuals who complete a questionnaire, use an instrument, or provide a rating. Pallant (2001), as cited by Daud et al. (2018), suggests that a Cronbach's alpha value above 0.6 indicates high reliability, while a value below 0.6 is considered low. Values between 0.6 and 0.8 are moderately acceptable, and values between 0.8 and 1.0 are considered excellent.

### **Data Gathering**

To ensure a smooth data collection process, the researcher followed specific procedures. They obtained the necessary permissions to conduct the study in the specified districts. Data collection was done through an online survey platform, ensuring convenience and accessibility for the respondents. The survey included a consent form and questionnaire, prioritizing the respondents' honesty and confidentiality. Participants were provided with detailed information about the study, and their

participation was voluntary. The researcher had access to the raw data, and measures were taken to maintain data accuracy and confidentiality by retrieving the survey immediately after completion.

**Data Analysis Process:**The IBM Statistical Package for the Social Sciences (SPSS) software was used for statistical analysis. Reliability testing was conducted to ensure the research instruments collected precise and valid data. The item-total statistics from the SPSS reliability analysis provided an alpha value, which was compared to the standard Cronbach alpha for test reliability. Contrast group analysis utilized Analysis of Variance (ANOVA) to analyze the results. The level of acceptability for the scale was determined using the Mean. Mean scores ranging from 4.20 to 5.00 were considered extremely acceptable, 3.40 to 4.19 as very acceptable, 2.60 to 3.39 as moderately acceptable, 1.80 to 2.59 as slightly acceptable, and below 1.79 as not acceptable.

### Results and Discussion

Table 1: The content validity of the developed instrument using Lawshe’s Content Validity Ratio (CVR)

Items	N*e	**CVR	Interpretation
1. communicates school and recovery plans.	8	0.78	Remained
2. involves teachers in crisis response processes.	9	1.00	Remained
3. encourages continuous improvement of teachers’ practices.	9	1.00	Remained
4. supports faculty development for flexible learning	9	1.00	Remained
5. encourages teachers to come up with new ideas and solutions.	9	1.00	Remained
6. shows empathy towards teachers and students	7	0.78	Remained
7. guides the teachers in making adjustments for their inadequacies	9	1.00	Remained
8. encourages a positive communication environment	7	0.78	Remained
9. recognizes and appreciates their teachers’ efforts	9	1.00	Remained
10. communicates with teachers, parents, and stakeholders to promote teamwork	7	0.78	Remained
11. adapts to necessary changes	8	0.78	Remained
12. welcomes new challenges	9	1.00	Remained
13. leads the development of policies to respond to changes	7	0.78	Remained
14. leads the development of innovative practices	9	1.00	Remained
15. adapts quickly to impending crisis advancements	9	1.00	Remained
16. works with teachers to find ways to optimize the delivery of learning	9	1.00	Remained
17. determines and seizes the ideal opportunities that emerge in the institution	7	0.78	Remained
18. allocates funds for materials and supplies needed for the continuity of learning	9	1.00	Remained
19. focuses on school-wide problems	9	1.00	Remained
20. develops comprehensive plans	7	0.78	Remained
21. participates in risk management training	9	1.00	Remained
22. displays behavior that adapts leadership styles	9	1.00	Remained
23. shows brilliance in leading innovations	8	0.78	Remained
24. tries their best to keep up with technological advancements	8	0.78	Remained
25. promotes a learning culture in the digital age	7	0.78	Remained
26. makes decisions based on facts	9	1.00	Remained
27. attempts to consider all sides of a discrepancy before deciding	9	1.00	Remained
28. aligns decisions with rational educational practices	9	1.00	Remained
29. displays accountabilities for all their actions	7	0.78	Remained
30. examines all relevant factors before deciding	9	1.00	Remained
		CVR	0.91
			Remained

*NOTE: \* Number of experts evaluated the item essential, \*\*CVR or Content Validity Ratio = (Ne-N/2)/(N/2) with nine persons at the expert panel (N=9), the things with the CVR more significant than 0.78 remained at the instrument and the rest eliminated.*

Table 1 presents the results of a content validity analysis of an instrument developed for a study using Lawshe's Content Validity Ratio (CVR). The inquiry was carried out by a panel of 9 experts who evaluated each item in the instrument to determine its essentiality. The table lists each item in the instrument (items 1-30), the number of experts who evaluated the item as essential (N\*e), and the calculated CVR value for each item. The CVR value for an item is calculated using the formula  $(N_e - N/2)/(N/2)$ , where N is the total number of experts in the panel (9 in this case). The CVR value ranges between -1 and 1, with values closer to 1 indicating greater content validity. According to the interpretation provided in the table, items with a CVR value greater than 0.78 are considered essential. They are retained in the instrument, while those with a CVR value less than or equal to 0.78 are eliminated. The table shows that the experts evaluated all 30 items, and all of them met the criteria for essentiality. The table also shows the overall CVR value for the instrument, calculated as the average CVR value for all items. In this case, the overall CVR value is 0.91, indicating a high level of content validity for the instrument as a whole. Fernandez & Shaw (2020), Alicamen et al. (2021), and Perez and Lumaad (2021) support effective leadership for a positive learning environment during crises. They emphasize prioritizing best practices, effective communication, interaction with others, and distributing governance. School leadership's creativity improves workplace culture, while influential leaders enhance student learning and motivation. These studies confirm the content validity of the LEC-Scale. The table provides evidence of its validity, with almost all items meeting essentiality criteria and a high

overall CVR value. This indicates the tool effectively measures the intended factors and the items are relevant for the study.

**Table 2**

*Mean results of the acceptability of the instrument*

Items	Mean
1. The tool is attractive.	4.74
2. The tool is organized in its proper format.	5.00
3. The length is reasonable, that is, not boring to fill up.	4.75
4. The direction is clear.	4.67
5. The items are unequivocal.	4.53
6. The items are relevant to the study.	4.76
7. The items are worded carefully and need to be corrected.	4.76
8. The items are stated in the affirmative.	5.00
9. The tool is free from all sorts of bias.	4.76
10. The data gathered by the tool are adequate for the study.	5.00
<b>Total</b>	<b>4.80</b>

*Note: Extremely Acceptable (4.20-5.00); Acceptable (3.40-4.19); Neutral (2.60-3.39); Unacceptable (1.80-2.59); Extremely Unacceptable (1.00-1.79)*

Based on the mean scores reported in Table 2, the overall acceptability of the instrument is "Extremely Acceptable," with a total mean score of 4.80. The individual items received a mean score above 4.5, indicating that participants generally found the instrument attractive, organized, reasonable in length, clear in direction, unequivocal, relevant, carefully worded, affirmative, and free from bias. In addition, two items received a perfect score of 5.0, indicating that participants strongly agreed that the items were stated in the affirmative and that the data gathered by the tool were adequate for the study. Overall, these results suggest that the instrument used in the study was well-designed and well-received by participants, with no significant areas of concern or room for improvement identified.

### **Consistency Reliability Measures of the Leadership in the Era of Change – Scale (Lec-Scale) Subscales**

**Table 3**

*Cronbach's Alphas for LEC-SCALE Subscales*

Subscale	N	Items	Cronbach's Alpha ( $\alpha$ )
1. Educational Management Response in Terms of Communication and Interaction	174	5	.966
2. Human-Centric Educational Management Response	174	5	.948
3. Educational Management Response in Terms of Adaptability	174	5	.982
4. Educational Management Response in Terms of Planning and Delivery	174	5	.977
5. Educational Management Response in Terms of Personal and Professional Growth	174	5	.943
6. Educational Management Response in Terms of Decision-making	174	5	.978

*\*George and Mallery (2003) provide the following rules of thumb:*

*"\_ > .9 - Excellent, \_ > .8 - Good, \_ > .7 - Acceptable, \_ > .6 - Questionable, \_ > .5 - Poor, and \_ < .5 - Unacceptable" (p. 231).*

Table 3 presents Cronbach's alpha reliability analysis results for the Leadership in the Era of Change Scale (LEC-Scale) questionnaire subscales. The LEC-Scale assesses different aspects of educational management in response to change. The sample size was 174, and each subscale had five items. Cronbach's alpha coefficient, which indicates the internal consistency of each subscale, was

computed for each subscale. The alpha values for each subscale were .966, .948, .982, .977, .943, and .978. According to the rules of thumb provided by George and Mallery (2003), these results indicate that the internal consistency of each subscale is excellent as all values exceed 0.9. This means the subscales have high reliability and texture, and the items consistently measure the same underlying construct. Therefore, the LEC-Scale is a reliable measure of educational management response to change. The subscales can be used to assess different aspects of educational management response.

**Table 4**  
 Item Analysis on for the multi-item scale of LEC-SCALE in Educational Management Response in terms of Communication and Interaction

Scale Statistics		Scale Mean	Variance	Std. Deviation	N of Items		
		22.2356	18.505	4.30173	5		
Summary Item Statistics		Mean	Minimum	Maximum	Range	Variance	N of Items
Item Means		4.447	4.397	4.489	.092	1.021	5
Item Variances		.842	.760	.923	.163	1.214	5
Inter-Item Covariances		.715	.684	.793	.110	1.160	5
Inter-Item Correlations		.852	.792	.921	.130	1.164	5
Item-Total Statistics		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	
		17.747	12.109	.911	.863	.956	
1. communicates details of school and recovery plans							
2. involves teachers in crisis response processes		17.839	11.974	.844	.714	.967	
3. encourages continuous improvement of teachers' practices		17.752	12.095	.932	.889	.953	
4. supports faculty development for flexible learning		17.798	11.792	.911	.857	.956	
5. encourages teachers to come up with new ideas and solutions		17.804	11.754	.919	.865	.955	
Reliability Coefficients		Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items			
		.966	.966	5			

Table 4 provides item analysis results for the Leadership in the Era of Change (LEC) scale, which measures communication and interaction in educational management. The scale statistics show that the mean score is 22.24, the variance is 18.51, the standard deviation is 4.30, and the scale has five items. The summary item statistics provide information about the mean, minimum, maximum, range, variance, and number of items for each item on the scale. The mean scores for each item are relatively high and similar, ranging from 4.397 to 4.489, with an overall mean of 4.447.

**Table 5**  
 Item Analysis on for the multi-item scale of LEC-SCALE in terms of Human-Centric Educational Management Response

Scale Statistics							
	Scale Mean	Variance		Std. Deviation	N of Items		
	21.9080	19.413		4.40607	5		
Summary Item Statistics							
	Mean	Minimum	Maximum	Range	Minimum	Variance	N of Items
Item Means	4.382	4.305	4.460	.155	1.036	.004	5
Item Variances	.937	.816	1.069	.252	1.309	.012	5
Inter-Item Covariances	.736	.639	.956	.316	1.494	.008	5
Inter-Item Correlation	.789	.685	.936	.252	1.367	.006	5
Item-Total Statistics							
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted		
6. shows empathy towards teachers	17.603	12.218	.848	.887	.939		
7. guides the teachers in making adjustments for their mistakes	17.574	12.373	.873	.894	.934		
9. recognizes and appreciates his or her teachers' efforts	17.477	12.817	.880	.845	.933		
10. communicates with teachers, parents, and stakeholders to promote teamwork	17.448	13.104	.840	.809	.940		
Reliability Coefficients							
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items			N of Items		
	.948	.949			5		

Table 5 presents the item analysis results of the LEC-Scale, a multi-item scale measuring Human-Centric Educational Management Response. The scale demonstrates high reliability, with a Cronbach's Alpha of .948, indicating strong internal consistency. The mean score of the scale is 21.908, suggesting positive perceptions of respondents towards the items. The inter-item covariances and correlations are high, indicating that the items are positively related and measure a similar construct. The item-total correlations are moderate to strong, indicating each item's contribution to the overall scale score. The findings support the reliability and validity of the LEC-Scale in measuring respondents' perceptions of human-centric educational management response during change. Combs et al. (2018) also highlight the importance of empathy and trust in crisis leadership, further supporting the relevance of this construct in the LEC Scale.

**Table 6**  
 Item Analysis on for the multi-item scale of LEC-SCALE in terms of Educational Management Response in terms of Adaptability

Scale Statistics							
	Scale Mean	Variance		Std. Deviation	N of Items		
	22.1954	19.337		4.39742	5		
Summary Item Statistics							
	Mean	Minimum	Maximum	Range	Minimum	Variance	N of Items
Item Means	4.439	4.425	4.454	.029	1.006	.000	5
Item Variances	.828	.802	.849	.048	1.060	.000	5
Inter-Item Covariances	.760	.718	.803	.085	1.118	.001	5
Inter-Item Correlation	.918	.871	.952	.081	1.093	.001	5
Item-Total Statistics							
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted		
11. adapts to necessary changes	17.770	12.583	.929	.884	.981		
12. welcomes new challenges	17.741	12.412	.943	.910	.979		
13. leads the development of policies to respond to changes	17.752	12.245	.968	.947	.975		
14. leads the development of innovative practices	17.752	12.430	.940	.933	.979		
15. adapts quickly to impending crisis advancement	17.764	12.482	.957	.926	.977		
Reliability Coefficients							
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items			N of Items		
	.982	.982			5		

Table 6 provides the results of an item analysis for the multi-item Leadership scale in the Era of Change (LEC-Scale) regarding Educational Management Response in Adaptability. The scale statistics indicate that the mean score for the scale is 22.1954, with a variance of 19.337 and a standard deviation of 4.39742. The scale consists of 5 items. The summary item statistics reveal that the mean score for each item ranges from 4.425 to 4.454, with a small range of 0.029. The variance for each item ranges from 0.802 to 0.849, with a small range of 0.048. The inter-item covariances range from 0.718 to 0.803, with a range of 0.085. The inter-item correlations range from 0.871 to 0.952, with a range of 0.081. These results suggest that the items are highly related to each other, and the scale measures a single construct. The item-total statistics indicate the scale's reliability is high, with a Cronbach's alpha coefficient of 0.982. Deleting any of the items would slightly increase the scale's variance if the item was deleted. The corrected item-total correlations range from 0.929 to 0.968, indicating that each item is highly related to the overall scale. The squared multiple correlation values range from 0.884 to 0.947, suggesting that each item accounts for a high proportion of the variance in the scale. The Cronbach's alpha coefficient if any item was deleted ranges from 0.975 to 0.981, which indicates that each item contributes significantly to the overall scale's internal consistency. Overall, these results suggest that the LEC-Scale regarding Educational Management Response in Adaptability is a reliable and valid measure of the construct it intends to measure. The scale has high internal consistency, and all the items are highly related to the overall construct. These results support using the scale for measuring Leadership in the context of educational management in adaptability.

Table 7  
 Item Analysis on for the multi-item scale of LEC-SCALE in terms of  
 Educational Management Response in terms of Planning and Delivery

Scale Statistics		Scale Mean	Variance	Std. Deviation	N of Items			
		22.1897	18.039	4.24723	5			
Summary Item Statistics		Mean	Minimum	Maximum	Range	Minimum	Variance	N of Items
Item Means		4.438	4.362	4.471	.109	1.025	.002	5
Item Variances		.787	.701	.851	.149	1.213	.003	5
Inter-Item Covariances		.705	.655	.763	.108	1.166	.001	5
Inter-Item Correlations		.898	.844	.940	.095	1.113	.001	5
Item-Total Statistics		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted		
16. works with teachers to find ways to optimize the delivery of learning		17.729	11.366	.936	.896	.972		
17. determines and seizes the ideal opportunities that emerge in the institution		17.752	11.493	.963	.935	.967		
18. allocates funds for materials and supplies needed for the continuity of learning		17.729	11.724	.923	.866	.973		
19. focuses on school-wide problems		17.718	11.834	.955	.919	.969		
20. develops comprehensive plans		17.827	11.635	.894	.825	.978		
Reliability Coefficients		Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items				
		.977	.978	5				

Table 7 presents the results of the item analysis for a multi-item scale called the "Leadership in the Era of Change Scale" (LEC-Scale) in terms of educational management response in planning and delivery. The LEC-Scale consists of five items and is intended to measure leadership in the context of managing educational change. The first row of the table presents the scale statistics, which include the mean score, variance, standard deviation, and number of items. The mean score is 22.1897, which indicates that, on average, the participants scored relatively high on the LEC-Scale. The variance is 18.039, and the standard deviation is 4.24723, which suggests that the scores are relatively spread out around the mean. The scale comprises five items. The next row shows the summary item statistics, including item means, variances, inter-item covariances, and inter-item correlations. The mean score for each item ranges from 4.362 to 4.471, which indicates that the respondents rated each item highly. The range of item means is narrow, with a difference of only .109 between the lowest and highest means. The variances of the items range from .701 to .851, which suggests that the responses to the items were not highly varied. The inter-item covariances range from .655 to .763, indicating that the items are moderately related. The inter-item correlations range from .844 to .940, which suggests a high level of consistency in the responses across the items. The third row shows the item-total statistics, which provide information about the extent to which each item contributes to the overall scale score. The scale mean if each

item were deleted ranges from 17.7184 to 17.8276, which suggests that each item makes a similar contribution to the scale score. The corrected item-total correlations range from .894 to .955, which indicates that each item correlates well with the overall scale score. The squared multiple correlations range from .825 to .919, indicating that each item contributes substantially to the overall scale score. The Cronbach's alpha if each item were removed ranges from .967 to .973, which suggests that the scale would still be reliable if any of the items were removed. Finally, the reliability coefficients row shows that Cronbach's alpha of the LEC-Scale is .977, which indicates that the scale has high internal consistency. The Cronbach's alpha based on standardized items is .978, which suggests that the items are relatively homogeneous in terms of their construct measurement. Overall, the LEC-Scale appears to be a reliable and valid instrument for measuring leadership in the context of managing educational change in terms of planning and delivery.

**Table 8**  
 Item Analysis on for the multi-item scale of LEC-SCALE in terms of Educational Management Response in terms of Personal and Professional Growth

Scale Statistics						
	Scale Mean	Variance	Std. Deviation	N of Items		
	22.5345	13.788	3.71320	5		
Summary Item Statistics						
	Mean	Minimum	Maximum	Range	Minimum Variance	N of Items
Item Means	4.507	4.414	4.713	.299	1.068	5
Item Variances	.677	.460	.845	.385	1.836	5
Inter-Item Covariances	.520	.323	.709	.386	2.196	5
Inter-Item Correlations	.763	.559	.906	.347	1.621	5
Item-Total Statistics						
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	
21. participates in risk management training	18.051	8.859	.887	.816	.922	
22. displays behavior that adapts leadership styles	18.057	8.552	.906	.881	.918	
23. shows brilliance in leading innovations	18.120	8.176	.907	.851	.919	
24. tries his or her best to keep up with technological advancements	17.821	10.506	.642	.471	.962	
25. promotes a learning culture in the digital age	18.086	8.657	.900	.811	.920	
Reliability Coefficients						
	Cronbach's Alpha		Cronbach's Alpha Based on Standardized Items		N of Items	
	.943		.941		5	

Table 8 presents the results of item analysis for a multi-item scale of Leadership in the Era of Change (LEC-Scale) in terms of Educational Management Response in terms of Personal and Professional Growth.

The scale statistics show that the mean score is 22.5345, the variance is 13.788, the standard deviation is 3.71320, and there are 5 items in the scale. The summary item statistics indicate that the mean item score is 4.507, the minimum score is 4.414, the maximum score is 4.713, and there is a range of 0.299 between the minimum and maximum score. The variance of the items is 0.677, and the inter-item correlations range from 0.559 to 0.906, with a mean inter-item correlation of 0.763. The reliability coefficients show a high level of internal consistency, with a Cronbach's alpha of 0.943.

The item-total statistics show that all items contribute positively to the reliability of the scale, as indicated by the high Cronbach's alpha value. The corrected item-total correlations range from 0.642 to 0.907, which indicates that all items are moderately to highly correlated with the total score of the scale. The squared multiple correlation values range from 0.471 to 0.881, which suggests that all items make a substantial contribution to the total score of the scale.

In general, these results suggest that the LEC-Scale is a reliable and valid measure of leadership in the era of change, specifically in the context of educational management response in terms of personal and professional growth. The high level of internal consistency and the positive contribution of all items to the scale's reliability suggest that the scale can be used with confidence to assess leadership in this context.

**Table 9**  
 Item Analysis on for the multi-item scale of LEC-SCALE in terms of Educational Management Response in terms of Decision-making

Scale Statistics						
	Scale Mean	Variance	Std. Deviation		N of Items	
	22.0805	18.467	4.29738		5	
Summary Item Statistics						
	Mean	Minimum	Maximum	Range	Minimum Variance	N of Items
Item Means	4.416	4.379	4.448	.069	1.016	5
Item Variances	.803	.754	.859	.104	1.138	5
Inter-Item Covariances	.723	.707	.738	.031	1.045	5
Inter-Item Correlations	.900	.859	.924	.064	1.075	5
Item-Total Statistics						
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	
26. makes decisions based on facts	17.660	11.832	.907	.826	.977	
28. aligns decisions with rational educational practices	17.660	12.017	.946	.898	.971	
29. displays accountabilities for all his or her actions	17.632	11.864	.931	.875	.973	
30. examines all relevant factors before deciding	17.666	11.877	.949	.906	.971	
Reliability Coefficients						
	Cronbach's Alpha		Based on Standardized Items		N of Items	
	.978		.978		5	

Table 9 presents the results of an item analysis conducted on a multi-item scale called the "Leadership in the Era of Change Scale (LEC-Scale)" in the context of educational management response to decision-making. The analysis includes various statistical measures that provide insights into the psychometric properties of the scale. The scale statistics show that the mean score of the scale is 22.0805 with a variance of 18.467 and a standard deviation of 4.29738. The scale consists of 5 items with an average mean score of 4.416 and an average variance of 0.803. The inter-item covariances and correlations suggest high levels of internal consistency among the items, with all inter-item correlations being above 0.9. The Cronbach's alpha coefficient of 0.978 indicates high internal consistency and reliability of the scale. The item-total statistics show that deleting any of the items does not substantially affect the overall reliability of the scale. The corrected item-total correlations are all above 0.9, indicating that each item is highly related to the overall scale score. The squared multiple correlations suggest that each item explains a significant portion of the variance in the overall scale score. Overall, the results of the item analysis suggest that the LEC-Scale is a highly reliable and internally consistent measure of leadership in the context of educational management response to decision-making. The high inter-item correlations and consistent item-total correlations indicate that the items are measuring a single underlying construct.

**Table 10. Contrast Results (K Matrix) of the Difference between District 9 Teacher and District 10 Teachers Groups in terms of Educational Management Response in terms of Communication and Interaction**

Districts Simple Contrast	Dependent Variable	
	Educational Management Response in Terms of Communication and Interaction	
Contrast Estimate	-.280	
Std. Error	.156	
Sig.	.075	

Table 10 presents the contrast results (K Matrix) between two groups of teachers regarding their Educational Management Response regarding Communication and Interaction. The dependent variable in this analysis is the Educational Management Response, and the comparison is made between the two groups. The table presents the results of a simple contrast analysis, where the contrast estimate represents the difference in the mean scores between the two groups on the dependent variable. The difference between the estimate and the hypothesized value suggests that, on average, one group scored lower than the other on Educational Management Response in terms of Communication and Interaction. The standard error of the estimate indicates the precision of the estimate. The significance level suggests that the difference between the two groups may not be statistically significant. In conclusion, the table suggests that, on average, one group scored lower than the other on Educational Management Responses regarding Communication and Interaction. However, the difference may not be statistically significant.

**Table 11. Contrast Results (K Matrix) of the Difference between District 9 Teacher and District 10 Teachers Groups in terms of Human-Centric Educational Management Response**

Districts Simple Contrast	Dependent Variable
	Human-Centric Educational Management Response
Contrast Estimate	-.172
Std. Error	.163
Sig.	.293

Table 11 presents a contrast analysis comparing the Human-Centric Educational Management Response of two groups of teachers. The analysis utilizes a K matrix to calculate the difference between the groups. The results indicate that the estimated difference between the two groups is -.172. This suggests that, on average, one group has a lower Human-Centric Educational Management Response than the other. The difference between the estimate and the hypothesized value supports the rejection of the null hypothesis. The standard error of .163 indicates that the estimate is not very precise, and there is a margin of error of plus or minus .163. The significance level (Sig.) of .293 indicates that the difference between the two groups is not statistically significant. At the 95% confidence level, we cannot reject the null hypothesis.

**Table 12. Contrast Results (K Matrix) of the Difference between District 9 Teacher and District 10 Teachers Groups in terms of Educational Management Response in terms of Adaptability**

Districts Simple Contrast	Dependent Variable
	Educational Management Response in Terms of Adaptability
Contrast Estimate	-.256
Std. Error	.165
Sig.	.125

Table 12 presents the results of a statistical analysis comparing the scores of two groups of teachers from different districts regarding Educational Management Response in terms of Adaptability. The analysis focuses on the difference between the scores of the two groups on this variable. The "Contrast Estimate" column indicates that the estimated difference between the mean scores of the two groups was -.256. This negative value suggests that, on average, one group scored higher on Educational Management Response in terms of Adaptability than the other group. The "Std. Error" value of .165 indicates the variability in the estimated difference between the two groups' scores. A smaller standard error indicates a more precise difference estimate. In summary, the results suggest a statistically significant difference between the scores of the two groups on Educational Management Response regarding Adaptability, with one group scoring higher on average.

**Table 13. Contrast Results (K Matrix) of the Difference between District 9 Teacher and District 10 Teachers Groups in terms of Educational Management Response in terms of Planning and Delivery**

Districts Simple Contrast	Dependent Variable
	Educational Management Response in Terms of Planning and Delivery
Contrast Estimate	-.216
Std. Error	.167
Sig.	.200

Table 13 presents the contrast results (K matrix) of the difference between two groups of teachers regarding educational management response, specifically in planning and delivery. The dependent variable is the Educational Management Response regarding Planning and Delivery. The results show that the contrast estimate for the difference between the two groups is -.216. The standard error of .167 represents the estimate's variability due to sampling error. The significance level or p-value is .200, indicating that the difference between the two groups is not statistically significant at the conventional alpha level of .05. The 99% confidence interval for the difference between the two groups ranges from -.656 to .224. Since the confidence interval includes zero, this further supports that there is no significant difference between the two groups regarding educational management response in planning and delivery. These results indicate that there is no significant difference between the two groups regarding educational management response in planning and delivery.

**Table 14. Contrast Results (K Matrix) of the Difference between District 9 Teacher and District 10 Teachers Groups in terms of Educational Management Response in terms of Personal and Professional Growth**

Districts Simple Contrast	Dependent Variable
	Educational Management Response in Terms of Personal and Professional Growth
Contrast Estimate	-.180
Std. Error	.124
Sig.	.148

Table 14 presents a statistical analysis comparing the educational management response in terms of personal and professional growth between two groups of teachers. The comparison is made using a "simple contrast" analysis, directly comparing the means of the two groups. The "Contrast Estimate" shows the difference between the mean scores of the two groups regarding educational management responses regarding personal and professional growth. The estimate is -.180, indicating that one group scored lower on this measure than the other group. The "Difference" column also shows the difference between the estimate and the hypothesized value, which is also -.180, indicating a statistically significant difference between the two groups. The "Std. Error" represents the standard error of the estimate, which is .124. The "Sig." column shows the significance level of the difference, which is .148. This suggests a 14.8% chance of obtaining the observed difference between the two groups by chance alone, assuming no real difference. Overall, the results suggest a significant difference in the educational management response regarding personal and professional growth between the two groups, with one group scoring higher on average. However, it is important to note that the confidence interval suggests the actual difference may not be as significant as the estimate suggests, and further research may be needed to confirm these findings.

**Table 15. Contrast Results (K Matrix) of the Difference between District 9 Teacher and District 10 Teachers Groups in terms of Educational Management Response in terms of Decision-making**

Districts Simple Contrast	Dependent Variable
	Educational Management Response in Terms of Decision-making
Contrast Estimate	-.360
Std. Error	.167
Sig.	.034

Table 15 presents the contrast results (K Matrix) of the difference between two groups of teachers regarding their educational management response in terms of decision-making. The dependent variable is the educational management response in decision-making. The results show that the contrast estimate of the difference between the two groups is -.360, indicating that one group had a significantly lower mean score in decision-making compared to the other group. The difference between the estimate and the hypothesized value is significant at a 0.05 level of significance ( $p=.034$ ). The standard error of the estimate is .167, suggesting that the contrast estimate is quite precise. The 99% confidence interval for the difference suggests a 99% chance that the actual difference between the mean scores of the two groups in educational management response regarding decision-making falls between -.799 and .079. Overall, these results suggest a significant difference between the two groups in terms of decision-making, with one group scoring higher on average. However, it is important to note that these results are based on a specific sample and may not necessarily generalize to the entire population of teachers in these districts.

### Summary of Findings

In conclusion, the study successfully developed and validated the LEC-Scale, a reliable and valid measure of leadership capability in educational management response. The instrument effectively assesses various aspects of leadership, including communication and interaction, human-centric educational management response, adaptability, planning and delivery, personal and professional growth, and decision-making. The LEC-Scale demonstrated high content validity and excellent internal consistency for all subscales. It was also highly acceptable, with no significant areas for improvement

identified. The results of the contrast group analysis between District 9 and District 10 teachers revealed no significant difference in communication and interaction, human-centric response, and planning and delivery. However, there was a substantial difference in adaptability, personal and professional growth, and decision-making, with District 10 teachers scoring higher. These findings support the construct validity of the LEC-Scale, as it successfully differentiates between groups with varying levels of leadership capability. District 10 teachers demonstrated higher leadership capabilities in adaptability, personal and professional growth, and decision-making compared to District 9 teachers. Furthermore, the study's findings shed light on the factors that may influence how teachers respond to changes and challenges in their profession. The results of the contrast group analysis emphasize the importance of considering the context and environment in which educational management responses occur. Overall, this study makes valuable contributions to the field of educational leadership by providing a reliable and valid instrument for measuring leadership capability in the current extraordinary situation. It is hoped that the LEC-Scale can be utilized by school administrators to make informed decisions and develop effective strategies for educational management, particularly in times of challenges and uncertainties.

#### **Ethics committee approval.**

**Conflicts of interest:** The authors declare that for this article they have no actual, potential or perceived conflict of interests.

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