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Factors Influencing Adversity Quotient of Pre-Service and In-Service Mathematics Teachers: Through the Lens of Organizational Culture

John Loui Mark Corral[1], Jose Alejandro Constantino L. Lara[2], Louis Robert C. Sison[3]*,
Francis Michael P. Yambao, PhD[4]
[1, 2, 3, 4] Centro Escolar University, Manila, Philippines
*Corresponding Author email: *sison2445097@ceu.edu.ph*

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Abstract

Aim: This study aimed to identify the organizational culture (OC) dimensions that influence pre-service and in-service mathematics teachers' adversity quotient (AQ).
Methodology: The causal-comparative quantitative research is utilized to achieve the goals of this paper. Through the Adversity Quotient and Organizational Culture Questionnaire, the data were gathered among 258 selected pre-service and in-service mathematics teachers from a public state university in Bulacan through stratified random sampling. Data is analyzed through frequencies, percentages, mean, standard deviation, and multiple regression analysis.
Results: Both the groups have moderate AQ. Moreover, both groups were exposed to a positive OC. Specifically, there is no significant difference between the two groups with the AQ and its four dimensions - control, ownership, reach, and endurance. However, there is a significant difference between the OC of the two groups, specifically the support dimension, indicating a higher level from the pre-service teachers than the in-service teachers. No significant difference exists between the two groups regarding the other three dimensions of OC, namely success, mission, and bureaucracy.
Conclusion: The success dimension positively affects the control dimension, ownership dimension, and the overall AQ of the pre-service teachers. On the other hand, the support dimension negatively affects the control dimension of the AQ, and the bureaucracy dimension positively affects the endurance dimension of the AQ for the in-service teachers.

Keywords: adversity quotient, organizational culture, pre-service mathematics teachers, in-service mathematics teachers

INTRODUCTION

Adversity is inevitable. As a result, the concept of resilience is often romanticized where people are expected to endure challenges without complaint. This idealization of resilience suggests that the people within a system should be able to persevere despite inadequate resources, poor organizational structures, or lack of professional development. While resilience is an admirable trait, its romanticization can obscure the need for systemic change.

Significantly, the teaching profession, particularly in mathematics education, is often characterized by constant pressures such as curriculum changes, evolving student needs, and increasing expectations for academic performance. For teachers to thrive in such environments, they must possess technical expertise and the resilience to navigate adversity. One framework that offers valuable insights into this aspect of human adaptability is the Adversity Quotient (AQ), a concept introduced by Stoltz (1997). AQ refers to an individual's ability to persevere through challenges, bounce back from difficulties, and grow stronger in adversity. Stoltz's model of AQ is based on the belief that one's ability to cope with adversity is not static; it can be developed and strengthened over time. The concept incorporates individuals' psychological, cognitive, and behavioral strategies to respond to adversity. AQ is often compared with other psychological metrics such as emotional intelligence and resilience, but AQ specifically focuses on the response to adversity and how it shapes long-term performance and success.

AQ comprises four critical dimensions: Control, Ownership, Reach, and Endurance (Stoltz, 1997). Each dimension provides insight into how individuals perceive and handle adversity. First, control posits the degree to which

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one feels in control of the situation and its outcomes. Second, ownership encompasses the level of personal accountability one assumes for dealing with adversity. Third, reach refers to the extent to which the individual perceives the adversity will affect other aspects of their life. Fourth, endurance describes how long one expects adversity or its effects to last. These dimensions are pivotal for understanding teachers' responses to challenges within the educational system, especially when examined through the lens of organizational culture.

In the context of education, a teacher's AQ can significantly affect their performance, well-being, and overall effectiveness in the classroom (Stoltz, 1997; Reyes & Keller, 2015). AQ plays a critical role in helping both students and teachers navigate the challenges inherent in learning and teaching. Schools are high-stress environments, particularly for teachers who must balance the demands of the curriculum, diverse student needs, administrative expectations, and evolving educational standards (Agyapong, et al., 2022). Teachers with a high AQ are more likely to maintain a positive outlook in the face of difficulties, such as disruptive classrooms or demanding workloads. They are better equipped to adapt to changing conditions, such as new policies or curriculum updates (Reyes & Keller, 2015).

AQ is particularly important in overcoming chronic stress and burnout, prevalent issues in the teaching profession. Research has shown that teachers with higher AQ are less likely to suffer from stress-related illnesses and are more capable of developing coping strategies to stay motivated and committed to their work (Oberg, et al., 2023). Notably, AQ is a key factor in fostering teacher retention and improved student outcomes, as teachers who can manage adversity tend to foster more resilient and engaged learners (Yin, et al., 2020).

Apart from these, when schools introduce new curricula or educational technologies, teachers with high AQ adapt more quickly. For instance, during the shift to remote learning due to the COVID-19 pandemic, teachers with higher AQ could better transition to online platforms, ensuring that students continue to receive quality instruction despite the challenging circumstances (Kim et al., 2021). This flexibility leads to better learning continuity and academic outcomes for students.

Thus, AQ plays a significant role in determining how teachers cope with these challenges. Paramanandam and Shwetha (2013) established in their study that AQ is a strong predictor of job satisfaction, particularly in professions where individuals regularly face stress and adversity, such as teaching. This is particularly relevant for pre-service and in-service mathematics teachers, as mathematics is often perceived as a difficult subject, and teachers may struggle to engage students or manage classroom dynamics. A high AQ can help teachers persevere and find innovative solutions to these challenges, enhancing their job satisfaction and overall well-being.

Similarly, Aini, et al. (2017) found that AQ, combined with work motivation and independence, significantly influenced teacher performance. This implies that teachers who can manage adversity effectively tend to be more motivated and perform better in the classroom. Nonetheless, teacher resilience is closely linked to student outcomes. Teachers with high AQ can create a more supportive and engaging learning environment, helping students overcome their own difficulties in learning, particularly in challenging subjects like mathematics. Another study by Hidayat et al. (2021) on the mathematical argumentation ability and AQ of pre-service mathematics teachers highlighted that teachers with higher AQ are better equipped to foster critical thinking and problem-solving skills in students. These teachers tend to approach classroom challenges with innovative teaching strategies, resulting in improved student understanding and performance.

However, it is essential to note that while AQ is a valuable trait, there is a tendency in both academic and organizational settings to romanticize resilience. The notion of resilience is often idealized, with an overemphasis on individuals' ability to "bounce back" from hardships without acknowledging the broader structural and institutional factors that contribute to adversity. This romanticization of resilience can obscure the need for organizational changes that support teachers in facing difficulties. In the context of mathematics education, romanticizing resilience might lead to unrealistic expectations that teachers should continuously "overcome" challenges like student disengagement or curriculum changes without addressing the underlying causes of these issues. Schools must balance the cultivation of resilience with efforts to create a supportive environment that empowers teachers to succeed without relying solely on their ability to endure adversity.

While research on AQ has primarily focused on individual traits such as personality, motivation, and emotional intelligence (Mesler, et al., 2021; Goleman, 2020), there is a growing recognition that external factors—especially those related to the working environment—also play a critical role in shaping how individuals respond to adversity. One such factor is organizational culture, a multifaceted concept encompassing the values, norms, practices, and leadership styles prevalent within an institution (Schein, 2010; Deal & Peterson, 2016). In educational settings, organizational culture influences how teachers perceive their work environment, their sense of belonging, and their capacity to cope with professional challenges (Shahzad, et al., 2012).

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Organizational culture refers to the shared values, beliefs, norms, and practices that characterize an institution. In educational settings, organizational culture shapes the way teachers interact with each other, their students, and the broader community. Paais and Pattiruhu (2020) describes organizational culture as the "invisible force" that influences behavior within organizations, encompassing both formal structures (such as policies and procedures) and informal practices (such as collegial relationships and leadership styles).

Relatively, the key components of organizational culture which include the following signify parallelism with the four dimensions of AQ. First, the support dimension pertains to the core principles that guide the behavior of staff and administrators, such as a commitment to equity, innovation, or collaboration leading to providing support to employees and staff (Sergiovanni, 2015). In relation to the AQ Control dimension, when teachers work in a culture where they feel empowered to take control of their classroom decisions, they are more likely to feel capable of managing adversity. Second, the mission dimension focuses on prioritizing the goals of the institution, of which accountability on one's responsibilities and tasks contribute to the success of the organization, such as the emphasis on teamwork or independent decision-making (Deal & Peterson, 2016). This aligns with the AQ Ownership dimension, as teachers in a supportive culture are more likely to take personal responsibility for overcoming challenges, knowing they have the assistance of the institution in formulating and implementing effective resolutions. Third, the success dimension encompasses the approach of school leaders in managing staff, setting goals, and resolving conflicts can significantly shape organizational culture where providing rewards on performance-based tasks are evident. Supportive, transformative leadership tends to foster a positive, inclusive culture (Heenan, et al., 2023). This supports the AQ Reach dimension, as teachers who work in such environments are less likely to let adversity spill over into other aspects of their professional or personal lives. Fourth, the bureaucracy dimension tackles the degree to which teachers are encouraged to work together according to the specific procedures and hierarchy in the organization, which sharing ideas, and engaging in professional dialogue affects both individual and collective performance (Hargreaves & Fullan, 2012). This aligns with the AQ Endurance dimension, as teachers in well-supported environments are more likely to view adversity as temporary and manageable, rather than an overwhelming or permanent state.

Consequently, a supportive organizational culture significantly impacts teacher performance by creating an environment where educators feel valued, empowered, and motivated. Schools that foster open communication, provide professional development opportunities, and prioritize teacher well-being tend to have higher-performing teachers (Waters & Orange, 2022). In such environments, teachers are more likely to collaborate, share resources, and support one another in solving problems, which enhances instructional quality and student outcomes (Darling-Hammond, 2017). Likewise, Oberg, et al. (2023) also posited that a positive organizational culture can also reduce teacher attrition. Schools with strong cultures of support report lower rates of teacher burnout and turnover because teachers feel connected to their peers and to the mission of the school. Conversely, Yin, et al. (2020) asserted that a toxic or unsupportive organizational culture can lead to high levels of stress, disengagement, and ultimately, lower teacher performance.

Henceforth, organizational culture plays a critical role in shaping teachers' attitudes towards change and challenges. A culture that encourages innovation, collaboration, and continuous learning tends to foster positive attitudes towards change, as teachers are more likely to view challenges as opportunities for professional growth rather than threats (Waters & Orange, 2022). For example, schools that promote a culture of shared leadership and collective problem-solving are better equipped to handle curriculum changes or technological advancements because teachers feel supported and empowered to adapt (Hargreaves & Fullan, 2012). In contrast, schools with rigid, hierarchical cultures may stifle teachers' willingness to embrace change. In such environments, teachers may resist new initiatives or reforms, viewing them as additional burdens rather than opportunities to improve teaching and learning (Paais & Pattiruhu, 2020). This resistance can lead to stagnation, reduced innovation, and, ultimately, poorer student outcomes.

Significantly, the study by Tansiongco and Ibarra (2020) highlighted the role of school leaders in cultivating such environments, where educational leaders' leadership style and AQ significantly influence teacher commitment and job performance. Aini, et al. (2017) also emphasized the importance of leadership in shaping a positive organizational culture that supports change management. Their study found that teachers' AQ, when combined with effective change management practices by school leaders, resulted in greater organizational commitment.

The intersection of AQ and organizational culture in the teaching profession is an emerging area of inquiry, for it remains underexplored, particularly in mathematics education. For pre-service (teachers in training) and in-service (practicing) mathematics teachers, the school environment and institutional culture play a pivotal role in shaping how they respond to adversity. Pre-service teachers are often exposed to their training institutions' culture, which can foster resilience or exacerbate stress as they prepare to enter the workforce (Cochran-Smith & Villegas, 2016). Meanwhile, in-service teachers, who operate within the established culture of schools or educational organizations, must

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continuously adapt to the demands of their profession (Hargreaves & Fullan, 2012). Understanding how organizational culture influences AQ in both of these groups is essential for identifying effective strategies to improve teacher support and development, including the context of mathematics education.

Hidayat et al. (2020) explored the influence of AQ on students' mathematical understanding abilities, finding that teachers with high AQ are better equipped to support students in overcoming difficulties in learning mathematics. This demonstrates the importance of AQ in promoting teacher resilience, which directly impacts student success. Moreover, the literature review by Hidayat, et al. (2021) on the role of AQ in pre-service mathematics teachers emphasized the need for teacher training programs to focus on developing AQ. Pre-service teachers with higher AQ are better prepared to handle the pressures of the classroom, manage student learning difficulties, and adapt to the ever-changing demands of the educational landscape.

Fostering Adversity Quotient (AQ) among mathematics teachers is crucial to address these challenges. Teachers with high AQ are better equipped to manage the stress and frustration of teaching difficult content or dealing with unmotivated students. By developing their AQ, mathematics teachers can approach challenges with resilience, maintain high expectations for student achievement, and implement creative strategies to engage students in problem-solving (Reyes & Keller, 2015). In addition, teachers with high AQ are more likely to persist in the profession, reducing teacher turnover in high-need subjects like mathematics (Oberg, et al., 2023).

Given the critical role that mathematics plays in preparing students for future academic and career success, it is essential for schools to cultivate a supportive organizational culture that enhances the AQ of mathematics teachers. This will enable them to meet the demands of the curriculum, improve student outcomes, and contribute to the development of a mathematically literate society.

This study, therefore, seeks to explore the factors of organizational culture that influence the AQ of pre-service and in-service mathematics teachers. Factors such as leadership styles, collaborative practices, institutional support, and shared values can either strengthen or undermine a teacher's ability to manage adversity (Waters & Orange, 2022). For instance, a school culture that promotes open communication, professional collaboration, and supportive leadership can enhance a teacher's resilience by fostering a sense of security and belonging (Sergiovanni, 2015). On the other hand, a culture marked by high-stress environments, limited resources, or a lack of collegial support may diminish a teacher's AQ, leading to burnout, decreased performance, and higher attrition rates (Oberg, et al., 2023).

Furthermore, the relationship between organizational culture and AQ has significant implications for teacher training and professional development. By identifying the cultural factors that positively influence AQ, educational institutions and policymakers can design more effective training programs that not only equip teachers with technical skills but also foster the emotional and psychological resilience necessary for long-term success (Darling-Hammond, 2017). For pre-service teachers, this means developing AQ-enhancing curricula that prepare them for the realities of the classroom (Cochran-Smith & Villegas, 2016). For in-service teachers, professional development programs that emphasize resilience-building within supportive organizational cultures can contribute to better job satisfaction, improved teacher retention, and higher levels of student achievement (Hargreaves & Fullan, 2012).

This research is particularly important because it addresses several critical gaps in the literature. While much attention has been paid to teacher burnout and stress management (Agyapong, et al., 2022), there has been little focus on how the organizational culture of schools influences teachers' ability to handle adversity. Moreover, most studies on AQ have focused on individual psychological factors, leaving the role of external, institutional factors largely unexamined (Stoltz, 1997). By focusing on the specific case of mathematics teachers—a group that faces unique pedagogical and societal pressures—this study contributes valuable insights into how educational environments can be structured to enhance teacher resilience and, by extension, improve educational outcomes (Yin, et al., 2020).

In summary, this study aims to explore the factors of organizational culture that influence the AQ of pre-service and in-service mathematics teachers. By examining these factors, this research hopes to provide practical recommendations for improving teacher training and professional development, ensuring that both current and future mathematics educators are better equipped to handle the challenges of the profession. Ultimately, a deeper understanding of these dynamics can lead to the creation of more resilient teaching communities and stronger educational institutions.

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Objectives

This research aimed to explore the influence of organizational culture and its components to the adversity quotient of pre-service and in-service teachers in mathematics.

Specifically, this study sought to answer the following questions.

1. How may the adversity quotient of the pre-service and in-service mathematics teachers be described in terms of;
   1.1. control;
   1.2. ownership;
   1.3. reach; and
   1.4. endurance?
2. How may the organizational culture of the pre-service and in-service mathematics teachers be described in terms of:
   2.1. support dimension;
   2.2. mission dimension;
   2.3. success dimension; and
   2.4. bureaucracy dimension?
3. Is there a significant difference between the adversity quotient and organizational culture of the pre-service and in-service mathematics teachers?
4. Do the dimensions of organizational culture of the pre-service and in-service mathematics teachers significantly affect their adversity quotient?
5. What capacity-building program may be crafted based on the implications of the study?

Hypothesis

Given the stated research problem, the following hypotheses were tested on 0.05 level of significance:

Hypothesis 1: There is a significant difference in the level of adversity quotient between the pre-service and in-service mathematics teachers.

Hypothesis 2: There is a significant difference in the level of organizational culture between the pre-service and in-service mathematics teachers.

Hypothesis 3: The dimensions of organizational culture of the pre-service and in-service mathematics teachers significantly affect their adversity quotient.

METHODS

Research Design

The most suitable method of research employed in this study is the quantitative method. According to Almeida, et al. (2016), quantitative research is systematic in nature and gathers numerical evidence and data through well-defined instruments. Moreover, quantitative research emphasizes the collection of empirical data and thrusts onto the investigation of verifiable observations, with analysis through statistical undertakings. This method is helpful to obtain existing information about a specific situation, group of people, or any kinds of events which one may wish to investigate. This study is descriptive since it pertains to the AQ of the pre-service and in-service mathematics teachers in terms of control, ownership, reach, and endurance. Also, to describe the organizational culture of the pre-service and in-service mathematics teachers at this time, in terms of support dimension, mission dimension, success dimension, and bureaucracy dimension.

Specifically, the study employed the causal-comparative method of research to determine the dimensions of organizational culture of the pre-service and in-service mathematics teachers that significantly affects their AQ. As per Busk (2017), this is a nonexperimental design that is employed to explore cause-and-effect relationships of the involved variables.

Population and Sampling

The respondents of this study are the pre-service and in-service mathematics teachers from a public university in Bulacan. The study encompasses newly inducted in-service mathematics teachers who graduated within the years 2022, 2023, and 2024, employed in either public or private institutions, and handling Junior High School and Senior High School mathematics. Moreover, the study also includes pre-service mathematics teachers from the first up to the

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fourth year, enrolled in the university under consideration. The researchers utilized the Raosoft Calculator to describe the desired sample size from the categories of the population, as shown in Table 1 below.

In terms of the sampling technique, the researcher employed the stratified random sampling since there are two groups involved in the study, the pre-service teachers and the in-service teachers. Stratified random sampling refers to a probability sampling where a certain population is divided into smaller groups or strata of which there is a proportionate representation for each stratum (Iliyasu & Etikan, 2021). Moreover, each group is separated into smaller subgroups. For instance, the pre-service mathematics teachers are categorized into the first years, second years, third years and fourth years. Moreover, the in-service mathematics teachers considered for this study are categorized into three groups, according to the year they graduated from the degree program. Through this sampling technique, participants for each demographic or stratum were randomly selected in order to represent the sample of the study. Specifically, there are 78 desired in-service teachers and 93 desired pre-service teachers, for a total of 171 respondents. However, 13 in-service teachers did not allow their responses to be recorded in the research endeavor, making the retrieved actual samples of in-service teachers as 65, hence, having the total actual sample of 158.

Table 1
Population and the Sample

Demographic	Population	Percentage	Desired Sample	Actual Sample
In-service Teachers (Graduated 2022)	69	22.62	38	30
In-service Teachers (Graduated 2023)	34	11.15	19	17
In-service Teachers (Graduated 2024)	37	12.13	21	18
4th Year Pre-service Teachers	44	14.43	25	25
3rd Year Pre-service Teachers	38	12.46	21	21
2nd Year Pre-service Teachers	44	14.43	25	25
1st Year Pre-service Teachers	39	12.79	22	22
TOTAL	**305**	**100%**	**171**	**158**

Instrument

The researchers used a survey questionnaire as a tool in this study transformed into a Google Forms for easier data collection to measure AQ and organizational culture.

Organizational Culture Questionnaire. This adopted 5-point Likert scale from Efeoğlu and Ulum (2017) is about to assess the organizational culture of the pre-service and in-service mathematics teachers. It covers the various dimensions that need to be measured, namely the support dimension, mission dimension, success dimension, and bureaucracy dimension whose Cronbach's Alpha are 97%, 82%, 88%, and 85%, respectively, with a total Cronbach's Alpha of 94%. Specifically, there are 18 statements for support dimension, 6 statements for mission dimension, 6 statements for success dimension, and 9 statements for bureaucracy dimension, leading to a total of 39 statements. In using this adopted instrument, the higher the response, the more positive the organizational culture of a school becomes.

Adversity Quotient Questionnaire. The adopted 5-point Likert scale by Stoltz (2000) encompasses the aspects of AQ, which are the control, ownership, reach, and endurance dimensions. There are twenty statements in the instrument, with four questions allotted for each dimension. The participant must decide on his/her potential coping with the adversity experienced for each of the given situations. On the scale, the higher the response, the higher the adversity gets. This copyrighted questionnaire is used to measure the AQ of the pre-service and in-service mathematics teachers. No modifications were made to the instrument, and the researchers sought permission from the copyright holders in order to use this instrument in the study.

Data Collection

A letter of request to conduct data gathering in a public university in Bulacan was employed for the approval of the Dean of the College of Education. Upon approval by the respective officials, a copy of the digital questionnaire were disseminated to target respondents which are the pre-service and in-service mathematics teachers from the University. The results of the retrieved copies of the questionnaires were tallied, tabulated, analyzed, and interpreted using appropriate statistical treatments.

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Treatment of Data

There were various statistical tools to be used in identifying the levels of the adversity quotient and organizational culture of the respondents.

Descriptive statistics, such as frequency, percentage, mean and standard deviation were used to determine the level of adversity quotient and perceived organizational culture of the respondents. To identify the adversity quotient, a scale, given its corresponding verbal interpretation, were administered from the results determined in the scoring and report sheet from the Adversity Response Profile. The mean of the responses in the Adversity Response profile will be interpreted using Table 2 below.

Table 2

Mean and Verbal Interpretation for Adversity Quotient

Mean	Verbal Interpretation
4.50 - 5.00	Very High
3.50 - 4.49	High
2.50 - 3.49	Moderate
1.50- 2.49	Low
1.00 - 1.49	Very Low

Moreover, their perceived organizational culture in their institutions was identified through the five-point Likert scale, as discussed in the previous portions. These descriptive statistical measures will indicate the characteristics of the organizational culture, which led to a better understanding of the problem. Through determining the mean and the standard deviation, the level of organizational culture can be assessed, as positive or negative, as shown in Table 3 below.

Table 3

Mean and Verbal Interpretation for Organizational Culture

Mean	Verbal Interpretation
4.50 - 5.00	Strongly Positive
3.50 - 4.49	Positive
2.50 - 3.49	Neutral
1.50- 2.49	Negative
1.00 - 1.49	Strongly Negative

Inferential statistics was the launching point to determine the factors influencing the AQ of pre-service and in-service mathematics teachers with respect to the organizational culture. Specifically, the statistical measure Multiple Regression Analysis was employed to determine the corresponding relationships of the stated variables. Multiple Regression Analysis is a predictive analysis technique wherein it is mainly utilized to determine and justify the relationship between the one continuous dependent variable and two or more independent variables. Moreover, Weisburd, et al. (2022) identified the statistical method as an effective tool used to forecast the existence of a variable (dependent) based on the movement of another (independent). In the context of this study, the dependent variable is the AQ while the independent variable is the organizational culture. This determined the relationship of the variables through the beta coefficient in identifying the movement of the other variable, in correspondence of its value. This measure best identified the effect of the multiple dimensions of the organizational culture to the AQ of the respondents. Nonetheless, the values obtained were the launching point to identify what would be the possible relationship between the variables. In light of the statistical measures mentioned, the researchers used Statistical Package for Social Sciences (SPSS) software Version 20 in computing and analyzing for the desired data.

Ethical Considerations

Throughout the conduct of the research, the constant observance to the core policies of Republic Act No. 10173 (Data Privacy Act of 2012), which is generally the "free flow of information to promote innovation and growth" (Chapter 1, Section 2) while protecting the respondents' elementary right to privacy, were the major concern of the researchers.

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The consent of the pre-service and the in-service mathematics teachers were properly sought before the conduct of the survey. To ensure that sensitive personal information were secured, informed consent were acquired from the key respondents of this study, which is found on the first pages of the Google Docs. The pre-service and in-service teachers' approval to participate in the study were obtained through Google Docs, including this study's salient features, which was thoroughly discussed in the cover letter.

The anonymity of the respondents were also considered. The researcher considered pre-service teachers and in-service teachers who opt not to participate in the study. For instance, from the expected 171 respondents, only 158 consented to include their data in this current study, 13 of which who opted not to participate were in-service teachers. In this manner, the honest willingness of the teachers to be included in the study were given the utmost respect. Moreover, if the pre-service and in-service teachers wish to withdraw from the study at any point, the researchers respectfully regard this. Nonetheless, the respondents must be assured that the data collected from this study will solely be utilized for research and academic purposes only.

RESULTS and DISCUSSION

Adversity Quotient of Pre-service and In-service Mathematics Teachers

Table 4
Adversity Quotient of Pre-service and In-service Mathematics Teachers

Dimensions of Adversity Quotient	Pre-service Teachers (N = 94)			In-service Teachers (N = 62)		
	Mean	SD	VI	Mean	SD	VI
Control	3.54	.60	High	3.44	.81	Moderate
Ownership	3.50	.64	Moderate	3.33	.75	Moderate
Reach	2.96	.63	Moderate	2.94	.86	Moderate
Endurance	2.83	.61	Moderate	2.80	.78	Moderate
Over-all	**3.18**	**.38**	**Moderate**	**3.13**	**.39**	**Moderate**

Table 4 above displays the AQ of pre-service and in-service mathematics teachers. All dimensions namely: control, ownership, reach, and endurance obtained moderate as its verbal interpretation under the in-service teachers. On the other hand, only the control dimension got a high AQ pertaining to pre-service teachers. As an overall mean, both teacher categories have a moderate AQ. That is, the teachers somewhat perceive they have significant control and influence in adverse situations, to some extent, they hold themselves accountable for dealing with situations regardless of their cause, a little bit keep setbacks and challenges in their place, not letting them infest the healthy areas of their work and lives. Lastly, they manage interminable difficulties and maintain hope and optimism to some degree.

Organizational Culture of Pre-service and In-service Mathematics Teachers

Table 5
Organizational Culture of Pre-service and In-service Mathematics Teachers

Dimensions of Organizational Culture	Pre-service Teachers (N = 94)			In-service Teachers (N = 62)		
	Mean	SD	VI	Mean	SD	VI
Support	4.08	.51	Positive	3.79	.67	Positive
Mission	4.14	.54	Positive	4.06	.60	Positive
Success	4.29	.53	Positive	4.14	.65	Positive
Bureaucracy	3.70	.53	Positive	3.69	.61	Positive
Over-all	**4.03**	**.44**	**Positive**	**3.87**	**.53**	**Positive**

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Table 5 exhibits the organizational culture of pre-service and in-service mathematics teachers. The entire dimensions in pre-service teachers, which are the support, mission, success, and bureaucracy together with their overall mean, obtained a mean of 4.08, 4.14, 4.29, 3.70, and 4.03, respectively. Moreover, under the in-service teachers with a mean of 3.79, 4.06, 4.14, 3.69, and 3.87. That is, these dimensions have a positive effect on the organizational culture of the mathematics teachers.

Significant Difference of Adversity Quotient of Mathematics Teachers

Table 6

Test of Difference of the Ownership Dimension of AQ of Pre-service and In-service Mathematics Teachers

Variable	Pre-service			In-service			*t*	df	*p*
	N	Mean	SD	N	Mean	SD			
Ownership	93	3.4957	.63836	65	3.3258	.75464	1.512	156	.132

An independent-samples t-test was conducted to compare the ownership dimension from the Adversity Quotient (AQ) of the pre-service and in-service mathematics teachers. The statistical test was facilitated since both the data for the level of ownership dimension from the pre-service and in-service teachers are found to be normally distributed. Generally, the null hypothesis was "The level of ownership dimension of the AQ of the pre-service and in-service mathematics teachers was not significantly different." Evidently, as identified in Table 6, the ownership level of the pre-service teachers ($\bar{x}$ = 3.50, SD = .64) is not significantly different from the ownership level of the in-service teachers ($\bar{x}$ = 3.33, SD = .75) with the given key conditions; t(156) = 1.512, p = .132. Clearly, there is no sufficient evidence to reject the null hypothesis, which implies that the level of ownership for both pre-service and in-service mathematics teachers are the same.

Table 7

Test of Difference of the AQ and Control, Reach, and Endurance Dimensions of Pre-service and In-service Mathematics Teachers

Variable	Group	n	Mean Rank	Sum of Ranks	U	p-value
Control	Pre-service	93	79.22	7446.50	2846.500	.806
	In-service	65	77.41	4799.50		
Reach	Pre-service	93	76.45	7186.50	2721.500	.484
	In-service	65	81.60	5059.50		
Endurance	Pre-service	93	80.54	7570.50	2722.500	.486
	In-service	65	75.41	4675.50		
Adversity Quotient	Pre-service	93	80.84	7598.50	2694.500	.426
	In-service	65	74.96	4647.50		

A Mann-Whitney U test was conducted to determine whether the control, reach, and endurance dimensions, and the overall adversity quotient significantly differ between the group of pre-service and in-service mathematics teachers. The non-parametric test was utilized since at least one of the dataset failed to meet the assumption of normality. Specifically, the reach dimension has the in-service teachers to demonstrate higher mean ranks of 81.60 than the pre-service teachers, with mean rank of 76.45. However, a different trend is observed with the control and endurance dimensions because the pre-service teachers demonstrated higher mean ranks of 79.22 and 80.54 respectively, than the in-service teachers with mean ranks of 77.41 and 75.41, respectively.. Generally, the overall level of adversity quotient showed a higher mean rank from the pre-service mathematics teachers (mean rank of 80.84) than the in-service mathematics teachers (mean rank of 74.96).

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Since the null hypothesis states that "There is no significant difference between the level of adversity quotient and its dimensions between the group of pre-service and in-service mathematics teachers," there is no sufficient evidence to reject this claim. Hence, the results indicated that there was no significant difference in terms of the control and the endurance dimensions of the two groups. Moreover, the adversity quotient of the pre-service mathematics and in-service mathematics teachers are not significantly different from each other. This implies that both the pre-service and in-service mathematics teachers demonstrate the same level of adversity quotient when confronted with professional situations that demand them to be resilient and be able to bounce back from the challenges they have encountered.

Significant Difference of Organizational Culture of Mathematics Teachers

Table 8

Test of Difference of the Support Dimension and Organizational Culture of Pre-service and In-service Mathematics Teachers

Variable	Pre-service			In-service			*t*	df	*p*
	N	Mean	SD	N	Mean	SD			
Support	93	4.07	.514	65	3.79	.669	3.013	156	.003
Organizational Culture	93	4.03	.438	65	3.87	.527	2.062	156	.041

An independent-samples t-test was conducted to compare the support dimension from the organizational culture (OC) and the overall organizational culture of the pre-service and in-service mathematics teachers. Generally, the null hypothesis was "The level of support dimension of the OC and the overall OC of the pre-service and in-service mathematics teachers was not significantly different." Table 10 displays that the level of support dimension of the pre-service teachers ($\bar{x}$ = 4.07, SD = .514) is significantly different from the level of support dimension of the in-service teachers ($\bar{x}$ = 3.79, SD = .669) with the given key conditions; t(156) = 3.013, p = .003. Moreover, the overall level of OC significantly differs (t(156) = 2.062, p = .041) between the pre-service ($\bar{x}$ = 4.03, SD = .438) and in-service mathematics ($\bar{x}$ = 3.87, SD = .527) teachers.

Since both p-values for the two variables are less than 0.05, the null hypothesis is rejected. Clearly, there is sufficient evidence to reject the null hypothesis, which implies that the level of support dimension and the overall level of OC is significantly different for both groups. Since the pre-service teachers demonstrated a higher mean for the support dimension, this explains the more structured support system given to them through their internship programs or off-campus teaching experiences. This finding is adhered by Cochran-Smith and Villegas (2016) where the pre-service teachers were given sufficient support systems through mentoring sessions from their cooperating teachers and course instructors to allow them to develop their content knowledge and pedagogy further. Moreover, the organizational culture for the pre-service teachers showed a slightly higher level than the in-service teachers, indicating that the school cultures of the pre-service teachers were more suited with their needs needed for them to be effective teachers of the future. This finding was affirmed by Teasley (2017) of which the importance of establishing positive OC within the development of pedagogical skills of pre-service teachers is crucial.

Table 9

Test of Difference of the Mission, Support, and Bureaucracy Dimension of OC of Pre-service and In-service Mathematics Teachers

Variable	Group	n	Mean Rank	Sum of Ranks	U	p-value
Mission	Pre-service	93	80.34	7552.00	2741.000	.529
	In-service	65	75.71	4694.00		
Success	Pre-service	93	82.31	7737.00	2556.000	.192
	In-service	65	72.73	4509.00		
Bureaucracy	Pre-service	93	79.99	7519.50	2773.500	.610
	In-service	65	76.23	4726.50		

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A Mann-Whitney U test was conducted to determine whether the mission, support, and bureaucracy dimensions of the organizational culture significantly differ between the group of pre-service and in-service mathematics teachers. Across the three dimensions, the pre-service teachers demonstrated higher mean ranks compared with the in-service teachers. Specifically, the mission dimension has the pre-service teachers to demonstrate higher mean ranks of 80.34 than the in-service teachers, with mean rank of 75.71. A similar fashion is observed in the success and bureaucracy dimensions where the pre-service teachers have mean ranks of 82.31 and 79.99 respectively, while the in-service teachers have mean ranks of 72.73 and 76.23 respectively.

Since the null hypothesis states that "There is no significant difference among the mission, success, and bureaucracy dimensions of organizational culture between the group of pre-service and in-service mathematics teachers," there is no sufficient evidence to reject this claim. Hence, the results indicated that there was no significant difference in terms of the mission, success, and bureaucracy dimensions of the two groups. This implies that both the pre-service and in-service mathematics teachers are both experiencing the same level of organizational culture in terms of their mission, support and bureaucracy dimensions. This can be attributed to the fact that the school cultures of the pre-service and the in-service teachers follow the state standards of the Department of Education (DepEd) in terms of the goals of quality education, the parameters of achievement of the teachers, and the hierarchical structure of the organization. All schools align their respective vision and mission statements to what the DepEd is aiming for the FIlipino learners. Moreover, the success indicators of both pre-service and in-service teachers are rooted in the Philippine Professional Standards for Teachers (PPST) where specific standards for beginning and proficient teachers are explicitly stated (DepEd, 2017). Nonetheless, the hierarchical structure of an organization where the pre-service and in-service teachers serve follows particular levels parallel to what the various schools in the country were observing (Hargreaves & Fullan, 2012).

Effect of Organizational Culture to Adversity Quotient of Mathematics Teachers

Table 10
Effect of Organizational Culture on Adversity Quotient of Pre-service and In-service Teachers

Teacher Category	Effect	Estimate	*SE*	*p*
Pre-service Teacher	Fixed effects			
	Intercept	2.143	.341	.000
	Support Dimension	-.008	.121	.947
	Mission Dimension	.050	.116	.669
	Success Dimension	.233	.112	.041
	Bureaucracy Dimension	-.037	.086	.671
In-service Teacher	Fixed effects			
	Intercept	2.503	.414	.000
	Support Dimension	.006	.110	.957
	Mission Dimension	-.033	.122	.786
	Success Dimension	.129	.131	.326
	Bureaucracy Dimension	.055	.096	.572

Note: The Dependent Variable is Adversity Quotient.

To test which among the dimensions of organizational culture has a significant effect on the adversity quotient of pre-service and in-service teachers, a multiple regression was conducted, with organizational culture and its dimensions as the predictors, with levels of adversity quotient as the dependent variable. Overall, the results showed that the utility of the predictive model for the pre-service teachers was significant, $F(4,89) = 3.147$, $R2 = .124$, $p = .018$. However, the predictive model for the in-service teachers was not significant, $F(4,57) = .849$, $R2 = .056$, $p = .500$.

Within the group of pre-service teachers, all of the predictors explain a minimal amount of 12.4% of the variance between the variables. The results showed that the success dimension of the organizational culture was a significant positive predictor of adversity quotient (AQ) ($\beta = .233$, $p = .047$), indicating the significant effect of the success dimension to the AQ. Ezra and Charles (2023) affirmed the notion that organizational culture impacts teachers' performance, which can be attributed to a faculty that emphasizes teamwork and rewarding positive results, which can

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be rooted in the success dimension of organizational culture. This finding relates to the study by implying that a positive organizational culture, particularly the success dimension, can improve the adversity quotient of the teachers by fostering a motivating environment driven by recognition of positive improvements and notable practices. The results also displayed that support dimension (β = -.008, p= .947), mission dimension (β = .050, p= .669), and bureaucracy dimension (β = -.037, p= .671) were not a significant predictor of AQ and did not imply significant effects on the AQ.

Further analysis revealed that the results showed that the success dimension of the organizational culture was a significant positive predictor of the control dimension of adversity quotient (AQ) (β = .392, p = .033), indicating the significant effect of the success dimension on the control dimension of AQ for pre-service teachers. The organizational culture is defined by Serra et al. (2021) as a pattern of basic values and presuppositions shared and learned by a group while resolving problems. This supports the notion that the organizational culture should influence control dimension of AQ as it directly impacts how individuals perceive and respond to adversity. In addition, Nurhayati et al. (2022) found that a positive organizational culture significantly impacts teachers' effectiveness, strengthening the belief that the organizational culture can positively improve teachers' adversity quotient by enabling a nurturing and work-oriented environment.

In addition, the results showed that the success dimension of the organizational culture was a significant positive predictor of ownership dimension of adversity quotient (AQ) (β = .450, p = .022), indicating the significant effect of the ownership dimension to the AQ. The findings affirm the results of Neculaesei et al.'s (2024) study, which found that organizational practices are positively related to social responsibility practices. The study suggested that individuals in organizations with a stronger human orientation tend to exhibit more responsible behavior, which enhance voluntary activities and social responsibility. However, in the case of pre-service teachers, the success dimension of organizational culture was the only one that significantly influenced the ownership of AQ. Although Muralidhar (2024) revealed that organizational culture can play a significant role in fostering responsibility and commitment within an organization, influencing how individuals approach challenges and take ownership of their actions, the findings showed that the dimensions of organizational culture did not have a significant effect on the ownership dimension of AQ among in-service teachers.

For the cluster of in-service teachers, all predictors explain a minimal 5.6% variance between the variables. The results showed that the support dimension (β = .006, p= .957), mission dimension (β = -.033, p= .786), success dimension (β = .129, p= .326), and bureaucracy dimension (β = .055, p= .572) of the organizational culture were not significant predictors of adversity quotient (AQ). Moreover, the dimensions of the organizational culture did not imply significant effects on the AQ. This finding is opposed to the conclusion of Virgana, et al. (2022) where they posited that a teacher could endure the challenges of the organizational culture with their adversity quotient, signifying the effect of the organizational culture to the adversity quotient of a teacher.

The results showed that the support dimension of the organizational culture was a significant negative predictor of the control dimension of adversity quotient (AQ) (β = -.606, p = .033), indicating the significant inverse effect of the support dimension on the control dimension of AQ. However, a contradicting perspective from Nurhayati et al. (2022) was identified since they have found that a positive organizational culture significantly impacts teachers' effectiveness, which strengthens the belief that the organizational culture can positively improve the adversity quotient of teachers by enabling a nurturing and work-oriented environment. In addition, the results showed that the bureaucracy dimension of the organizational culture was a significant positive predictor of the endurance dimension of adversity quotient (AQ) (β = .384, p = .039), indicating the significant direct effect of the bureaucracy dimension on the endurance dimension of AQ. This suggests alignment to the findings of Mubarok (2023) that a strong bureaucratic culture within the organization plays a key role in fostering endurance, helping individuals persist through challenges.

Capacity Building Program on Adversity Quotient and Organizational Culture

The findings indicate that the adversity quotient of both pre-service and in-service mathematics teachers falls within a moderate level, and that they are exposed to a positive organizational culture. Additionally, for pre-service teachers, the "success" dimension of organizational culture significantly influences their adversity quotient. However, for in-service teachers, no dimension of organizational culture was found to have a significant effect on their adversity quotient. Following a comprehensive analysis of the results from testing the impact of organizational culture dimensions on the adversity quotient of both pre-service and in-service teachers, the study will implement the Resilience and Empowerment through Adversity and DYnamism (READY) program as an intervention program.

Project READY is designed to have a meaningful impact on the educational community's gaps by focusing on enhancing resilience and promoting a positive organizational culture within schools. Evidently, this intervention aims to improve pre-service and in-service mathematics teachers' adversity quotient (AQ). Also, it aims identify effective

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practices that contribute to sustaining a positive organizational culture within schools and the broader community, and disseminate strategies to empower teachers in actively fostering and contributing to a supportive and thriving organizational culture in their respective institutions.

The project is directed towards junior high school and senior high school pre-service and in-service mathematics teachers, as well as school administrators and department heads, when applicable. Meanwhile, the project will be implemented by in-service mathematics teachers with very high adversity quotients, as measured by the Adversity Quotient Scale, along with extensive experience in teaching mathematics. Project READY will incorporate research-based practices designed to enhance both AQ and organizational culture, applying adult learning practices consistently throughout its capacity-building framework. By focusing on the development of skills essential for work efficiency and satisfaction, such as improving AQ in various work situations and enhancing the ability to contribute to a positive organizational culture, the project aims to foster a more resilient, collaborative, and high-performing educational environment.

The implementation of Project READY will follow a structured, step-by-step approach incorporating one of the 4As of Adult Learning for each session, ensuring that participants gain both knowledge and practical skills. First phase particularly involves Activity, where participants will engage in a structured activity designed to introduce new concepts and skills. These activities will be hands-on and interactive, allowing participants to immerse themselves in the content and begin to develop their understanding of the key concepts. The second phase, Analysis, provides time and sufficient time to reflect on their experiences and make sense of the new knowledge. Facilitators will guide participants through a process of questioning and reflection, helping them connect what they have learned to their existing knowledge and professional experiences. This phase will serve as a bridge for the third phase, Abstraction, where participants will synthesize the new information and begin to generalize the key concepts. This is an important stage where participants move from understanding specific examples to applying general principles that are relevant to their teaching practice and school environments. Finally, in the fourth phase, Application, participants will be given practical tasks to test out and apply the knowledge they have acquired. These tasks could be individual or collaborative and will be designed to help participants see how they can implement the concepts in their day-to-day work. This phase will then lead to a new activity related to the current session.

Conclusion

The level of adversity quotient for both pre-service and in-service mathematics teachers is moderate. For both the pre-service teachers and in-service teachers, control is perceived as the highest dimension while the lowest dimension is the endurance. Only the pre-service teachers demonstrated a high perceived level under the control dimension. All other dimensions are perceived within the moderate level.

The level of organizational culture for both pre-service and in-service mathematics teachers is positive. For both pre-service and in-service teachers, all dimensions are perceived to be positive. Moreover, the success dimension is the highest perceived dimension while the lowest perceived dimension is the bureaucracy.

There is no significant difference between the adversity quotient of pre-service and in-service mathematics teachers across the four dimensions and its overall level. The organizational culture of the pre-service teachers is higher than the in-service teachers. Moreover, the success dimension of the two groups differ, with the pre-service teachers demonstrating a higher level. However, the mission, support, and bureaucracy dimensions did not show any significant differences.

For the pre-service teachers, the success dimension of organizational culture significantly affects their overall adversity quotient. Specifically, the success dimension also significantly affects the control dimension and ownership dimension of their adversity quotient. For the in-service teachers, the support dimension of organizational culture significantly affects the control dimension of their adversity quotient. Moreover, the bureaucracy dimension of organizational culture significantly affects their endurance dimension of adversity quotient. All other clusters were not found to significantly affect the adversity quotient and their dimensions.

The Project READY: Resilience and Empowerment through Adversity and Dynamism is targeted to improve the adversity quotient of the pre-service and in-service mathematics teachers and to sustain the positive organizational culture within their respective institutions. Anchored upon the Philippine Professional Standards for Teachers and the 4As of Adult Learning, this capacity building program will be given to Junior High School and Senior High School pre-service and in-service mathematics teachers.

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Recommendations

In line with the study's findings and conclusions, the following recommendations are shared to the educational community. The pre-service and in-service teachers' level of adversity quotient may be improved through a recommended capacity-building program beforehand or any other teacher training programs with the same thrust. Since the level of organizational culture is already at a positive level, the school administrators or school leaders may demonstrate or sustain practices that promote positive organizational culture. Moreover, they may introduce research-based practices that improve the organizational culture of their respective schools. Policymakers may revisit the existing safeguard practices for pre-service and in-service teachers that focus on their well-being, particularly on their resilience and capacity to adapt with the fast-changing educational environment. Moreover, policymakers may systematically devise a reward system to recognize institutions that consistently promote positive organizational culture practices. Future researchers may explore the other factors which are not covered in the current study that may potentially affect the adversity quotient of pre-service and in-service mathematics teachers.

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