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The Effect of Adversity Quotient on Students Performance , Students Learning Autonomy and Students Achievement in the Covid-19 Pandemic Era: Evidence from Indonesia

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Corresponding Author:	Imron Muttaqin, Dr. Institut Agama Islam Negeri Pontianak INDONESIA
First Author:	Imron Muttaqin, Dr.
Order of Authors:	Imron Muttaqin, Dr.
	Arief Sukino, Dr.
	Nur Hamzah
	Asrof Syafi'i, Dr.
	Chusnul Chotimah, Dr.
	Imam Junaris, Dr.
	Muh. Khoirul Rifa'i, Dr.
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Suggested Reviewers:	Idi Warsah, Doctoral Institut Agama Islam Negeri Curup idiwarsah@gmail.com Expert in education and psychology
Opposed Reviewers:	

COVER LETTER

Imron Muttaqin
Institut Agama Islan Negeri (IAIN) Pontianak
Jl. Letjend. Suprapto No. 19 Pontianak Kalimantan Barat
Indonesia

Thursday, June 10, 2021

Dear HELIYON EDITORS

I wish to submit an original research article entitled “The Effect of Adversity Quotient on Students Performance , Students Learning Autonomy and Students Achievement in the Covid-19 Pandemic Era: Evidence from Indonesia” for consideration by HELIYON.

I confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

In this paper, I/we report on / show that Adversity quotient affects students learning motivation, student performance and student learning autonomy. This is significant statistically.

We believe that this manuscript is appropriate for publication by HELIYON because it open new paradigm for studying the adversity quotient and its implicaiton for educational aspect in the pandemic covid-19.

We have no conflicts of interest to disclose. Please address all correspondence concerning this manuscript to me at imron.muttaqin@gmail.com

Thank you for your consideration of this manuscript.

Sincerely,

Imron Muttaqin

Research Article

The Effect of Adversity Quotient on Students Performance, Students Learning Autonomy and Students Achievement in the Covid-19 Pandemic E: Evidence from Indonesia

Imron Muttaqin[1*], Sukino[2], Nur Hamzah, [3] Asrof Syari'i [4], Chusnul Chotimah[5], Imam Junaris[6], Muh. Khoirul Rifa'i[7]

[1*] Institut Agama Islam Negeri Pontianak, Kalimantan Barat. Indonesia. Email: imron.muttaqin@gmail.com
[2*] Institut Agama Islam Negeri Pontianak, Kalimantan Barat. Indonesia. Email: ariefsukino@yahoo.co.id
[3*] Institut Agama Islam Negeri Pontianak, Kalimantan Barat. Indonesia. Email: hamzahptk@gmail.com
[4] Institut Agama Islam Negeri Tulungagung, Tulungagung, Indonesia Email: asrop.stainta@gmail.com
[5] Institut Agama Islam Negeri Tulungagung, Tulungagung, Indonesia Email: chusnultata@gmail.com
[6] Institut Agama Islam Negeri Tulungagung, Tulungagung, Indonesia Email: im02juna@gmail.com
[7*] Universitas Islam Negeri Sunan Ampel, Surabaya, Indonesia. Email: rifai@uinsby.ac.id

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Keywords:
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ABSTRACT

This research investigates the effects of the adversity quotient introduced by Paul G. Stoltz on students achievement motivation, student learning autonomy and student performance. The study was conducted through an online survey with 218 participants from selected students of two Islamic senior high school in Indonesia. Data and information gathering from respondent analyzed by partial least square structural modelling using SmartPLS. This research revealed that adversity quotient were significant constructs affected on students achievement, students learning autonomy and student performance. This research opens a new paradigm for studying the adversity quotient and its implication for other educational aspects.

1. Introduction

Adversity quotient is a person's ability to manage difficulties and obstacles in his life becomes an opportunity that needs to be solved with his intelligence. The adversity quotient is one factor that affects a person's success in carrying out tasks because he can solve problems. Regardless of the profession and position becomes one's primary task, one must have the intelligence to deal with problems that arise and their duties and responsibilities, including becoming a teacher or student in school.

Adversity quotient will help students in carrying out their duties as students to face the problems faced. The problem may arise from inside or outside of the student. Therefore, students need strength, fortitude, resilience, and intelligence to face difficulties and get the best way out. Rational intelligence (IQ) and emotional intelligence (EQ) are not enough to make a person successful; therefore, it takes the ability to manage the obstacles and challenges that face him, which is called the Adversity quotient.

Stoltz said that a person's success in his life can be measured by his ability to face difficulties in life (Stoltz, 2005). These capabilities can be in the form of resilience and tenacity and the ability to face problems in carrying out their duties and functions. People who can deal with problems better can control the situation and have a chance to succeed (Phoolka & Kaur, 2012). As well as students in school, those who can control the situation and face problems that become obstacles have a great chance of success

Adversity quotient is a person's ability to manage difficulties and obstacles in his life becomes an opportunity that needs to be solved with his intelligence. The adversity quotient is one factor that affects a person's success in carrying out tasks because he can solve problems. Regardless of the profession and position becomes one's primary task, one must have the intelligence to deal with problems that arise and their duties and responsibilities, including becoming a teacher or student in school. Adversity quotient will help students in carrying out their duties as students to face the problems faced. The problem may arise from inside or outside of the student. Therefore, students need strength, fortitude, resilience, and intelligence to face difficulties and get the best way out. Rational intelligence (IQ) and emotional intelligence (EQ) are not enough to make a person successful; therefore, it takes the ability to manage the obstacles and challenges that face him, which is called the Adversity quotient.

Adversity quotient correlates with a person's performance regardless of profession. A person with high adversity quotient performance and vice versa because performance is directly proportional to the adversity quotient. People who do not have intelligence in dealing with problems will always depend on others, especially parents, peers, and others (Hurlock, 2000). Likewise, if they do not have an Adversity quotient, they cannot take their initiative and have no idea when facing problems. In the end, it also has an impact on its performance, independence, and achievements.

Several studies reveal the effect of adversity quotient on aspects of the workplace. For instance, Sukardewi has revealed a significant effect of adversity quotient on work ethic, school organization culture, and teacher performance (Sukardewi et al., 2013). It also affects student performance (Huijuan, 2009). Another study was conducted by Suryadi and Santoso and suggested improving students adversity quotient because it was shown to significantly affect mathematics subjects (Suryadi & Santoso, 2017). Research related to student adversity also proved better than learning methods using guide note-taking (Wardani & Saputro, 2017).

The achievements and performance of students in school will indeed not be separated from students learning autonomy. Learning autonomy is students behaviour in carrying out wishes and expectations in the right way without depending on others. In this case, students can learn on their own, determine to learn effectively and according to their personality. Learning autonomy is essential in education, especially for students. Based on the background of the importance of adversity quotient for students above, researchers are interested in researching the effect of adversity quotient on performance, learning autonomy, and student achievement.

2. Thoery and hyphoteses development

2.1. Adveristy quotient

Adversity quotient is a person's ability to face situations, problems, and obstacles in life. According to Stoltz, a person with an Adversity quotient will face obstacles that face an opportunity. The

adversity quotient has four dimensions (Stoltz, 1997). This quotient can be seen in a person's ability to hold on to his position when facing problems.

Several studies prove the effect of adversity quotient on various aspects of human life, such as the on the motivation of achievement (Ridho, 2016), mathematics learning outcomes (Rukmana et al., 2016), student entrepreneurial motivation (Wisesa & Indrawati, 2016), emotional maturity (Aryono et al.,2017), student stress management (Jung, 2017) and many other factors related to adversity quotient.

2.2. Students performance

Performance assessment is a form of assessment that requires students to practice or apply the knowledge obtained in various contexts according to the criteria for desired learning. Performance is the appearance of work that describes the implementation of the work. Many factors affect student performance. Huijuan research reveals that the adversity quotient affects student performance (Huijuan, 2009); Soysub & Jarinto also reinforces that the Adversity quotient affects student performance (Soysub & Jarinto, 2018). Mwivanda and Kingi also reveal that adversity quotient is one dimension of student performance (Mwivanda & Kingi, 2019) even suggested conducting AQ tests for teachers because of the importance of a teacher's face problems in learning. Therefore, this study hypothesizes a significant positive effect of adversity quotient intelligence on student performance.

***H_2** : Adversity quotient will positively predict students performance*

2.3. Students learning autonomy

Brockett and **Hiemstra** said learning autonomy is an active learning activity derived from the encouragement of intention or motive to master a competency to overcome problems built with the provision of knowledge that already has (Brockett R.G.,2018). Learning autonomy is the ability to self-learning that can be expressed through an intensive process conducted by students to achieve the purpose of learning and mastery of lesson materials by using a variety of creative skills and techniques as well as the initiative of the student concerned; this ability can also be categorized as self-empowerment by students.

While the ability to self-empowering affected by students Adversity quotient (Kanjanakaroon, 2012). The ability to adjust students is necessary to bring up the desire to learn independently; students who easily adjust to the learning environment will quickly determine learning attitudes. Among the things that can make students have the ability to adjust is the Adversity Quotient (Fitriany, 2008); this ability will impact independence in dealing with the problems faced. Based on the explanation above, the study hypothesizes that the Adversity quotient affects students learning autonomy.

***H_3**: Adversity quotient will positively predict students learning autonomy*

2.4. Students achievement motivation

Learning achievement is proof of the success of learning or students ability to carry out their learning activities according to the weights achieved. Learning achievement results from learning interaction between teachers and students in changes in students knowledge, attitudes, and skills. The achievement of learning outcomes that students have passed is also affected by the adversity quotient (Nurhaidah, 2015; Nurhayati & Fajrianti, 2015); also, and good adaptability will allow students to develop and excel. The research results also prove that the ability to survive and face student problems also affects their achievement motivation (Suheil & Ratna Syifa'a, 2008). With the high motivation of learning, students will continue to learn to affect the expected achievement (Ozen, 2017). Achievement is not obtained instantly, but with earnest efforts, Students who can face learning difficulties will adjust quickly (Tian & Fan, 2014). This ability is predicted to affect student achievement. Several previous studies have revealed a relationship between adversity quotient and student achievement (Mz et al., 2017; Rukmana et al., 2016; Supardi U.S, 2015; Suryadi & Santoso, 2017; Virlia, 2015).

These results show that students who can face problems and obstacles in learning also have high-achieving motivation. Suhel and Ratna also support this statement to reveal the effect of adversity quotient on achievement motivation (Suheil & Ratna Syifa'a, 2008). Therefore, we hypothesize that the adversity quotient affects students achievement motivation.

***H_1** : Adversity quotient will positively predict students achievement motivation*

2. Method

This research was conducted from January 2021 until March 2021; this study uses a survey conducted online. The data was obtained from student respondents at MAN 1 Pontianak and MAN 2 Pontianak. Respondents consisted of students of both male and female with an average age of 15-18 years. The measurement of this research model was completed using SmartPLS 3.2 following the Partial Least Squares Structural Equation Modelling (PLS-SEM) procedure. The sample size is an important factor when used for partial least squares-SEM (PLS-SEM) samples of at least 100 sample people, or meet a ratio between 5:1 to 10:1 (responses per item in the scale) to improve confidence result (Goodhue et al., 2006). This research was approved by the Institute for Research and Community Service (Lembaga Penelitian dan Pengabdian Kepada Masyarakat) Pontianak State Institute for Islamic Studies (Institut Agama Islam Negeri) Pontianak, West Kalimantan Indonesia (protocol number B-137/In.15/LP2M/PP.00.9/06/2021).

3.1. Instrumentation

The literature review is conducted as a guideline to determine definitions, concepts, and analysis related to the theoretical framework (Prasojo et al., 2020). Review literature also used to determine the research instruments. This study uses a quantitative approach with four constructs; adversity quotient, students performance, students learning autonomy and students achievement. The measurement of each variable uses the previous theory modified by the researchers. Adversity quotient measurement uses Stoldz's opinion. This item uses four dimensions: control, ownership, reach, and endurance (CORE) with a Likert scale consisting of strongly agree, agree, not agree and strongly disagree. This item was later developed and modified into six dimensions.
The measurement of each variable uses the previous theory of researchers modified by the researchers. Adversity quotient measurement in this study uses Stoldz's opinion. This item uses four dimensions: control, ownership, reach, and endurance (CORE) with a Likert scale consisting of strongly agree, agree and strongly disagree. This item was later developed and modified into six dimensions.

Students performance variables are measured using self-created indicators by opinion-based researchers (Glencoe, 2006) are; 1) obtain information, 2) process information, 3) assess the quality of information, 4) use information for a specific purpose, and 5) use information for presentation. Students learning autonomy is measured using five indicators put forward by Hiemstra; 1) setting learning objectives, 2) having learning skills, 3) having a scientific approach in learning, 4) having standards of success in learning and 5) having initiatives in learning (Brockett & Hiemstra, 2018). The last, for Students achievement motivation measured using opinions (McClelland, 1987) on the motivation of achievement, items are made by researchers with five indicators; 1). The need for achievement as measured by desire, 2). Perseverance in achieving achievements, 3). The ability to utilize the help of others to achieve goals and careers, 4). Have positive and negative feelings and personal responsibilities, and 5). Be able to associate learning with a career.

3.2. Data Collection

The data gathering from two Islamic senior high schools, MAN 1 and MAN 2 Pontianak. Data collection, is done after obtaining permission from the school principals. The research samples were taken purposively with students who had a minimum above average completion criteria. During the data collection process, all respondents filled out the google form completely. The result of google form is then exported to Microsoft excel and created in CSV format to be executed using SmartPLS. Two hundred and eighteen respondents consisted of 64 male students and 36 female students.

4. Results

This study aims to determine the effect of adversity quotient on student performance, student learning autonomy and student learning achievement. Previously formulated hypotheses are analyzed using SmartPLS 3. Construct is accepted as an explanation of the effect of adversity quotient on students performance, students learning independence and students learning achievement.

4.1. Measurement models

Model measurements are performed by assessing the reliability and validity of the instrument. Indikator assessed with three measurements; 1) indicator loading and internal consistency reliability, 2) convergent validity, 3) discriminant validity (Hair et al., 2019). figure 1.

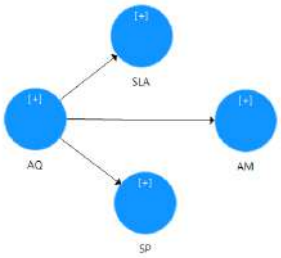

Figure 1. proposed model

4.2. Indicator loadings and internal consistency reliability

The results of the analysis using PLS-SEM were used to look at indicators in this study. Table 1 exhibits the detail of loadings. Three indicators from adversity quotient (AQ 3, AQ4 and AQ 5), Three indicators from student achievement motivation (AM1, AM2, AM4), two indicators from students learning autonomy (SLA3, SLA5), and two indicators from student performance (SP3, SP4) were dropped since gained loading of below .708 (Hair et al., 2019). Internal consistency reliability should be reported through Cronbach's alpha (α) and Composite Reliability (CR). The values of α and CR in this study implemented the threshold set; α should be >.600 (Ghozali, 2011). CR should be > .708. Table 1 shows the details of both measure values.

Table 1. Reflective indikator loadings and internal consistency reliability

	Item	Loading	α	CR	AVE
Adversity Quotient	AQ1	0,745	0,704	0,835	0,629
	AQ2	0,824			
	AQ6	0,808			
Students Achievement Motivation	AM3	0,810	0,751	0,856	0,664
	AM5	0,783			
	AM6	0,851			
Students Learning Autonomy	SLA1	0,775	0,671	0,819	0,603
	SLA2	0,824			
	SLA4	0,727			
Students Performance	SP1	0,781	0,663	0,816	0,597
	SP2	0,790			
	SP5	0,746			

4.3. Convergent validity

Convergent validity is associated with the validity of research instruments. Convergent validity intended to check the high low relationship between indicators measures the same construct. This study uses SmartPLS to analyze instrument measurements. Convergent validity is met if the AVE value ≥ .500 (Henseler et al., 2009). The instrument convergent validity analysis results showed that some indicators did not meet the convergent validity; some were removed because they did not meet the maximum AVE value limit. The remaining indicators meet the convergent validity requirements (table 2). Reliability tests are viewed based on Cronbach's Alpha value. Based on the smartPLS output, the Adversity quotient value is 0.534, Students performance is 0.654, Students learning autonomy is 0.603, and student achievement motivation is 0.608. Reliability is also seen from composite reliability. Variables that have a composite reliability value of > 0.7 mean high reliability. The results showed that the adversity quotient has composite reliability 0.811, Students performance 0.786, Students learning autonomy 0.789, and Students achievement motivation 0.836 Table 1.

4.4. Discriminant validity

Discriminant validity is the extent to which a construct is different from other constructs. By implementing the Fornell Larcker criterion, the AVE scores of a construct should be lower than the shared variance for all model constructs. From the study results, the AVE scores of every construct are lower than that of its shared variance table2 .

Table 2. Fornell-Larcker Criterion

	Adversity Quotient	Students Achievement Motivation	Students Learning Autonomy	Students Performance
Adversity Quotient	0,793			
Students Achievement Motivation	0,424	0,815		
Students Learning Autonomy	0,488	0,579	0,776	
Students Performance	0,485	0,540	0,526	0,772

Therefore, the discriminant validity was established based on the evaluation of the Fornell Larcker criterion. Further, discriminant validity can also be evaluated through the examination of cross-loadings. When a loading value on a construct is bigger than those of all of its cross-loading values on the other constructs, the discriminant validity emerges. Table 3 performs that all indicators' values (bold) of the outer loading of every construct were above the values of all their cross-loadings on the other constructs. Thus, discriminant validity emerged from the cross-loading value examination. Discriminant validity problems also appear when HTMT values are higher than .900. The construct can be similar if HTMT shows a value of > .900, lacks discriminant validity. Table 4 informed that all values of HTMT were lower than .900. The results inform that the values significantly differed from 1.

Henseler, Ringle dan Sarstedt menyarankan agar nilai untuk menguji validitas diskriminan nilai tidak lebih besar dari 0.9 (Henseler et al., 2015). Berdasarkan tabel diatas, semua nilai HTMT berada dibawah 0.9 yang berarti bahwa semua indikator berdasarkan Heterotrait-Monotrait Rasio valid karena berada dibawah 0.9.

Table 3. HTMT

	AQ	AM	SLA	SP
Adversity quotient (AQ)				
Motivation achievement (AM)	0,576			
Students learning Autonomy (SLA)	0,832	0,679		
Student performance (SP)	0,784	0,677	0,790	

Table 4. Cross loading

	Adversity Quotient	Student Achievement Motivation	Student Learning Autonomy	Student performance
AQ1	0,745	0,399	0,354	0,393
AQ2	0,824	0,365	0,495	0,426
AQ6	0,808	0,253	0,517	0,464
AM3	0,394	0,810	0,418	0,411
AM5	0,275	0,783	0,355	0,374
AM6	0,349	0,851	0,411	0,397
SLA1	0,480	0,400	0,775	0,345
SLA2	0,471	0,387	0,824	0,453
SLA4	0,390	0,346	0,727	0,435
SP1	0,456	0,450	0,448	0,781
SP2	0,381	0,353	0,420	0,790
SP5	0,407	0,311	0,346	0,746

4.5. Structural model assessment

Structural model measurements use several steps. This measurement starts by calculating the reported collinearity with variance inflation factor (VIF) values. The relationship is done with the test in the second stage, while the third stage is calculated coefficient determination (R^2). The fourth stage is calculated f^2 to know the relevance of the construct; this calculation is intended for the explantation of the selected endogenous construct. Regarding the R^2 value and the effect size of f^2 for the f^2 value, the data is calculated using the Blindfolding procedure to obtain the Q^2, fifth, and sixth stage values. The data is also calculated using PLS-SEM through blindfolding procedure in reporting Q^2 Values.

4.6. Collinearity issue

Furthermore, to test whether this model is worth using, a Collinearity test is used. An instrument is eligible to proceed to the following process if the VIF value is less than 3 for the inner model, while for the outer model, it is smaller than 10. Adversity quotient is predictor of students achievement motivation (VIF = 1,000), Adversity quotient is predictor of students learning autonomy (VIF = 1,000), and Adversity quotient is predictor of students perfomrance (VIF = 1,000), table 5.

4.7. Structural model relationship

Coefficient path calculation between endogenous and exogenous constructs was performed bootsrap 5,000 sub-sampling. Applying 5% of significance (*one talled*). Adversity quotient was significant predictor for students achievement motivation (β = 0,424 ; t = 7,284, p = 0,000), Adversity quotient was significant predictor for students learning autonomy (β = 0,579 ; t = 12,570, p =0,000), and Adversity quotient was significant predictor for students performance (β = 0,540 ; t = 11.031, p = 0,000).

Table 5. VIF values

	AQ	AM	SLA	SP
Adversity quotient (AQ)				
Motivation achievement (AM)		1,000	1,000	1,000
Students learning Autonomy (SLA)				
Student performance (SP)				

Table 6. Final result

	β	Mean	SD	T-Statistic	P Value	Sig
Adversity Quotient -> Students Achievement Motivation	0,424	0,433	0,058	7,284	0,000	Yes
Adversity Quotient -> Students Learning Autonomy	0,579	0,584	0,046	12,570	0,000	Yes
Adversity Quotient -> Students Performance	0,540	0,543	0,049	11,031	0,000	Yes

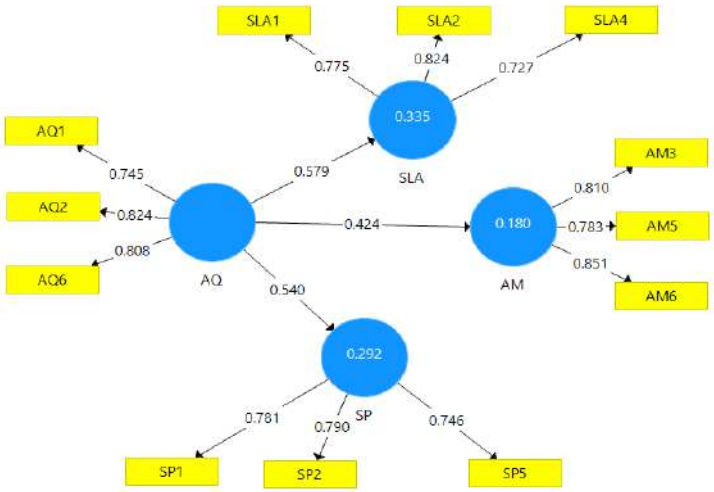

Figure 2. Final model

4.8. Coefficient of determination (R^2)

The limitation of criteria in coefficient determination values is three, 0.67 as substantial, 0.33 is called moderate, and 0.19 is called weak (Chin, 1998). The coefficient determination value is used to see if the measurement of exogenous latent variables against endogenous variables has a substantive effect. The R^2 value of Students Achievement motivation variable is 0.176, Students Learning Autonomy is 0.332, and Students Performance is 0.288. The results of the R^2 calculation can be seen in the table 7;

4.9. Effect size (f^2)

Effect size (f^2) measurement is done by looking at changes in the coefficient of determination (R^2) value to see how exogenous latent variables affect endogenous variables, whether they have a substantive effect (Ghozali, 2014). The $\mathbf{f^2}$ value .02 define a small effect, .15 a medium effect and „.35 means a large effect. Student learning autonomy gained the largest effect and students achievement motivation gained the smallest effect (table 8).

Table 7. Coefficient determination (R^2)

	R^2	R Square Adjusted	Consideration
Students Achievement Motivation	0,180	0,176	Weak
Students Learning Autonomy	0,335	0,332	Moderat

Students Performance	0,292	0,288	Weak

Table 8. f^2 result

	$f2$	Effect size
Students Achievement Motivation	0,219	Moderate
Students Learning Autonomy	0,504	High
Students Performance	0,412	High

4.10. Predictive relevance (Q^2)

The Stone-Geisser test (q^2) is a test to measure how well the observation value is generated by the model as well as its parameters. If the q^2 value is greater than 0, then the model has predictive relevance, whereas if it is less than 0, it means that the model does not have predictive relevance (Ghozali,2014). If q^2 is greater than 0, it indicates that exogenous constructs have relevance predictor to endogenous constructs. Ghozali (2014) suggest that the Predictive relevance values criteria .02 (*informs a small preictive*), 0.15 *informs a medium*, and 0.35 (*informs a large*).

The blindfolding result shows that students achievement motivation, students learning autonomy and students performance shows medium predictive. Detail Q^2 presented in table 9.

Table 9. Predictive relevance

	Q^2	Predictive relevance
Students Achievement Motivation	0,125	Medium
Students Learning Autonomy	0,159	Medium
Students Performance	0,109	Medium

3.2 Discussion

Affect of adversity quotient on students learning autonomy

Autonomy in learning is not formed quickly but formed through a long process since childhood. Autonomy is an attitude that allows one to act freely, do something at one's motivation and for one's own needs that can be in the form of thinking and acting original/creative and initiative, able to affect the environment, have confidence, and have satisfaction without the help of others (Masrun, 1986). This ability makes students with high AQ able to adjust to the demands of learning. Adversity quotient affects how students determine their own learning goals, implement the learning skills needed with a scientific approach, have standards, and have their initiative in learning. Nur Syam expressed his opinion that the independence of learning has several elements, namely; 1) responsible attitude to carry out duties, 2) awareness of students rights and obligations in the form of moral discipline that becomes behaviour, 3) self-maturity, 4) awareness of developing health, strength both physical and spiritual, 5) self-discipline by obeying the ongoing discipline, conscious rights and obligations (Syam, 1999).

Affect of adversity quotient on students achievement motivation

The results of the assessment of the construct showed there are three valid and reliable indicators, namely; 1) *If I get advice and guidance, I do my best for my achievements*, 2) *The learning materials taught by the teacher support my achievements*, and 3) *I think that the learning materials in school are closely related to my achievements*. Adversity quotient affects students motivation through these three indicators. The results showed that the Adversity quotient affects these three indicators by 42.4%. The ability of students to carry out learning after receiving guidance from teachers and their confidence in a performance-supporting material is a good predictor of the effect of adversity quotient.

Learning is a process of change that occurs continuously in humans with guidance from the philosophy of life. *Achievement* is a result that has been achieved that is realized in activities with the desired goal (Winkel, 1991). In order to obtain achievements in learning, intellectual intelligence alone is not enough to succeed in learning. Students need resilience, fortitude, and proficiency in finding solutions in their lives, with the resilience, fortitude, and tenacity of students to excel. The results of this study showed that the Adversity quotient affects student achievement. It means that the study results corroborate Phoolka and Kaur, which revealed that the adversity quotient is a predictor of a person's success in facing difficulties related to how he behaves under challenging situations, self-control, and finding the source of problems (Phoolka & Kaur, 2012). Becoming an accomplished student takes earnest effort, which can be done by increasing motivation and learning despite many obstacles and challenges. This study's findings corroborate Nurhayati, and Zaenuddin's research revealed that adversity quotient affects students learning achievement (Nurhayati & Fajrianti, 2015; Zainuddin, 2011) in addition to improving academic achievement (Yodsakun, 2008). The study also supports Suryadi's finding that the Adversity quotient affects student achievement (Suryadi & Santoso, 2017).

3. Conclusions

Adversity quotient positively affects students performance, learning autonomy, and students achievement motivation. This study revealed the effect of the Adversity quotient on achievement motivation is 42.4%, Adversity quotient on learning independence is 57.9%, Adversity quotient on student performance is 54%. The effect of the adversity quotient on the three variables above is confirmed to be positively significant. Thus, this study supports and enriches the literature concerning student performance, motivation, and learning autonomy during the covid-19 pandemic. Students need an introduction to the problems they face and creativity to face and get rid of the learning obstacles they face, and more resilience to concentrate on learning materials. The results of this study require support of advanced researchers interested in conducting similar research; educational stakeholders need to contribute to improving the Adversity quotient of students and teachers both during pandemics and normal situations. This study reveals the effect of adversity quotient on student performance, learning autonomy, and student achievement motivation. However, respondents are only limited to outstanding students in MAN 1 and MAN 2 Pontianak. Therefore, more research with more respondents is needed for better follow-up studies. This study recommends that schools

continue to improve students adversity quotient, especially with qualitative approaches require more in-depth interviews about the Adversity quotient. Students need to recognize the learning difficulties experienced and know how to deal with them; in addition, students need to believe that all the learning materials taught are closely related to their achievements.

Declarations

Author contribution statement

Imron Muttaqin; conceived and designed the experiment; performed the experiments.

Sukino; Contributed reagents, materials, analysis tools or data.

Asrof Syafi'i; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

Chusnul Chotimah; Contributed reagents, materials, analysis tools or data.

Imam Junaris; Analyzed and interpreted the data; Wrote the paper.

Muh. Khoirul Rifa'i; Contributed reagents, materials, analysis tools or data.

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Competing statement

The authors declare no conflict interest.

Additional information

No additional information is available for this paper.

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References

Aryono, S. Y., Machmuroch, & Karyanta, N. A. (2017). Hubungan antara Adversity Quotient dan Kematangan Emosi dengan Toleransi terhadap Stres pada Mahasiswa Pecinta Alam Universitas Sebelas Maret. Jurnal Wacana, 9(18), 12-27.

Brockett, R. G., & Hiemstra, R. (2018). Self-direction in adult learning: Perspectives on theory, research and practice. Routledge.

Chin, W. W. J. M. m. f. b. r. (1998). The partial least squares approach to structural equation modeling. 295(2), 295-336.

D. Yazon, A., & Ang-Manaig, K. (2019). Adversity Quotient®, Emotional Quotient and Academic Performance of Filipino Student-Parents. PEOPLE: International Journal of Social Sciences, 4(3), 1253-1264. https://doi.org/10.20319/pijss.2019.43.12531264

Espaňola, R. P. (2016). Adversity Quotient (AQ) and Academic Performance of Selected Students in MSU Marawi City. Proceedings Journal of Education, Psychology and Social Science Research, 3(1), 57-62. https://doi.org/10.21016/icepss.2016.ma09wf124o

Fitriany, R. (2008). Hubungan adversity quotient dengan penyesuaian diri sosial pada mahasiswa perantauan di UIN Syarif Hidayatullah Jakarta.

Ghozali, I. (2011). Aplikasi Analisis Multivariate Dengan Program IBM SPSS19. Badan Penerbit Universitas Diponegoro Semarang.

Ghozali, I. (2014). Structural Equation Modeling Metode Alternatif dengan Partial Least Square (Edisi Kedua ed.). Badan Penerbit Universitas Diponegoro Semarang.

Glencoe, M.-H. (2006). Performance Assessment In The Science

Goodhue, D., Lewis, W., & Thompson, R. (2006). PLS, small sample size, and statistical power in MIS research. Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS'06).

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. J. E. b. r. (2019). When to use and how to report the results of PLS-SEM.

Henseler, J., Ringle, C. M., & Sarstedt, M. J. J. o. t. a. o. m. s. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. 43(1), 115-135.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In New challenges to international marketing. Emerald Group Publishing Limited.

Huijuan, Z. (2009). The adversity quotient and academic performance among college students at st . Joseph ' scollege. Quezon, 1-96.

Hurlock, E., B. . (2000). Psikologi Perkembangan. Erlangga.

Jung, K.-S. (2017). The Relation between Adversity Quotient and Stress in University Student. Korean Journal of Youth Studies, 24(6), 231-251.

Kanjanakaroon, J. J. I. J. o. L. (2012). Relationship between Adversity Quotient and Self-empowerment of Students in Schools under the Jurisdiction of the Office of the Basic Education Commission. 18(5).

Kuhon, F. (2020). A Study on Students Adversity Quotient and Academic Performance in English Subject. Journal of Advanced English Studies, 3(1), 24-29.

Masrun. (1986). Studi Mengenai Kemandirian Pada Penduduk Di Tiga Suku (Jawa, Batak, Bugis). Universitas Gajah Mada.

McClelland, D. C. (1987). Human motivation. CUP Archive.

Mwivanda, M., & Kingi, P. M. (2019). Teachers' Adversity Quotient Dimension of Control and Students Academic Performance in Secondary Schools in Kenya. Journal of Education and Training, 6(1), 83-83. https://doi.org/10.5296/jet.v6i1.14373

Mz, Z. A., Risnawati, R., Kurniati, A., & Prahmana, R. C. I. (2017). Adversity Quotient in Mathematics Learning (Quantitative Study on Students Boarding School in Pekanbaru). International Journal on Emerging Mathematics Education, 1(2), 169-169. https://doi.org/10.12928/ijeme.v1i2.5780

Nurhaidah. (2015). Pengaruh EQ dan AQ terhadap prestasi belajar ASKEB 1. Jurnal Ilmu Kebidanan Indonesia, 05(02), 134-148.

Nurhayati, N., & Fajrianti, N. (2015). Pengaruh Adversity Quotient (AQ) dan Motivasi Berprestasi terhadap Prestasi Belajar Matematika. Formatif: Jurnal Ilmiah Pendidikan MIPA, 3(1). https://doi.org/10.30998/formatif.v3i1.110

Ozen, S. O. (2017). The effect of motivation on student achievement. In (pp. 35-56). https://doi.org/10.1007/978-3-319-56083-0_3

Phoolka, S., & Kaur, N. (2012). Adversity quotient: A new paradigm in management to explore. The International Journal Research Journal of Social Science & Management, 2(7), 109-117.

Prasojo, L. D., Habibi, A., Yaakob, M. F. M., Pratama, R., Yusof, M. R., Mukminin, A., & Hanum, F. J. H. (2020). Teachers' burnout: A SEM analysis in an Asian context. 6(1), e03144.

Ridho, E. (2016). Hubungan Adversity Quotient Dengan Motivasi Berprestasi Pada Mahasiswa Yang Mengikuti Organisasi Intra (Bemfa). Jurnal Penelitian UMM, 5(2), 209-220.

Rukmana, I., Hasbi, M., & Paloloang, B. (2016). Hubungan Adversity Quotient Dengan Hasil Belajar Matematika Siswa Kelas XI SMA Negeri Model Terpadu Madani Palu. Jurnal Elektronik Pendidikan Matematika Tadulako, 3(3), 325-333.

Soysub, A., & Jarinto, K. (2018). The Effects of Multiple Intelligent (IQ, EQ and AQ) on Employee Performance: A Case of ABC Automotive Co. Ltd. RMUTT Global Business Accounting and Finance Review (GBAFR), 2(1), 1-12.

Stoltz, P. G. (1997). Adversity quotient: Turning obstacles into opportunities.

Stoltz, P. G. (2005). Adversity Quotient: Mengubah Hambatan Menjadi Peluang. PT.Grasindo. Jakarta.

Suheil, F., & Ratna Syifa'a, R. (2008). Adversity Quotient (AQ) dan motivasi berprestasi pada siswa program akselerasi dan program reguler. Gifted Review Jurnal Keberbakatan dan Kreativitas, 2(2).

Sukardewi, N., Dantes, N., & Natajaya, N. (2013). Kontribusi Adversity Quotient (AQ), etos kerja, dan budaya organisasi terhadap kinerja guru SMA negeri di Kota Amlapura. e-Journal

Program Pascasarjana Universitas Pendidikan Ganesha, 4(2), 1-12.
Supardi U.S, S. U. S. (2015). Pengaruh Adversity Qoutient terhadap Prestasi Belajar Matematika. Formatif: Jurnal Ilmiah Pendidikan MIPA, 3(1). https://doi.org/10.30998/formatif.v3i1.112
Suryadi, B., & Santoso, T. I. (2017). Self-Efficacy, Adversity Quotient, and Students Achievement in Mathematics. International Education Studies, 10(10), 12-12. https://doi.org/10.5539/ies.v10n10p12
Syam, N. (1999). Pengantar Filsafat Pendidikan. FIP IKIP Malang.
Tian, Y., & Fan, X. (2014). Adversity quotients, environmental variables and career adaptability in student nurses. Journal of Vocational Behavior, 85(3), 251-257. https://doi.org/10.1016/j.jvb.2014.07.006
Virlia, S. (2015). Hubungan Adversity Quotient Dan Prestasi Belajar Pada Mahasiswa Program Studi Psikologi Universitas BM. Psibernetika, 8(8), 62-75.
Wardani, R., & Saputro, D. (2017). The Comparison of Team Assisted Individualization and Think Pair Share With Guided Note Taking on Relation and Function Viewed From Adversity Quotient Student. Education and Language International Conference Proceedings, 747-753.
Winkel, W. (1991). Psikologi Pengajaran. Grasindo.
Wisesa, D., & Indrawati, K. R. (2016). Hubungan Adversity Quotient Dengan Motivasi Berwirausaha Pada Mahasiswa Universitas Udayana Yang Mengikuti Program Mahasiswa Wirausaha. Jurnal Psikologi Udayana, 3(2). https://doi.org/10.24843/jpu.2016.v03.i02.p02
Yodsakun, A. (2008). Relationship Between Emotional Intelligence (EQ) Adversity Quotient (AQ) and Moral Quotient (MQ) Towards Academic Achievement of Mattayom Suksa Two Students. Journal of Education, 19(2), 129-142.
Zainuddin. (2011). Pentingnya adversity quotient dalam meraih prestasi belajar. Jurnal Guru Membangun, 26(2), 1-10.

Appendix 1. *Research instrument (in English and Indonesian language) after measurement assessment*

	Questions
	Adversity Quotient
AQ1	I can control myself when faced with learning difficulties
	Saya dapat mengendalikan diri saya ketika menghadapi kesulitan dalam belajar
AQ2	I know the cause of my learning difficulties, but I can deal with them and know how to end them.
	Saya mengetahui penyebab kesulitan belajar saya, tapi saya dapat dapat menghadapinya dan tahu cara mengakhirinya.
AQ6	I know how to deal with problems in my learning
	Saya tahu bagaimana menghadapi permasalahan dalam belajar saya
	Student Learning Autonomy
SLA1	I can set my own learning goals
	Saya dapat menentukan tujuan belajar saya sendiri
SLA2	I have the learning skills I need
	Saya mempunyai keterampilan belajar yang saya perlukan
SLA4	I have a standard of success in my own learning
	Saya memiliki standar keberhasilan dalam belajar saya sendiri
	Achievement Motivation
AM3	When I get advice and guidance I do my best for my achievements.
	Apabila saya mendapatkan nasehat dan bimbingan saya melaksanakan dengan sebaik-baiknya demi prestasi saya.
AM5	The learning materialstaught by the teacher support my achievements.
	Materi-materi pembelajaran yang diajarkan oleh guru menunjang prestasi saya.
AM6	I think that the learning materials in school are closely related to my achievements.
	Saya berpikiran bahwa materi pembelajaran di sekolah berkaitan erat dengan prestasi saya.
SP1	I was able to find, complete, collect and identify the material I obtained from the learning process
	Saya mampu menemukan, menyelesaikan, mengumpulkan dan mengidentifikasi materi yang saya dapatkan dari proses belajar
SP2	I was able to give an explanation and make an example of the material I got in learning
	Saya mampu memberikan penjelasan dan membuat contoh tentang materi yang saya dapatkan dalam belajar
SP5	I can talk about, write and discuss the materials I have obtained during my studies.
	Saya dapat membicarakan, menulis dan mendiskusikan materi yang sudah saya dapatkan selama belajar.

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