IS ADVERSITY QUOTIENT (AQ) ABLE TO PREDICT THE ACADEMIC PERFORMANCE OF POLYTECHNIC STUDENTS?

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Abstract
The Adversity Quotient (AQ) was originally intended to empower employees within the organization. Technology-oriented workers such as high-tech polytechnic students and resilient to any challenge become national focus in the future. The challenges of polytechnic students are increasing, especially in the face of transforming technical education and strengthening their intelligence. In line with the concept of intelligence that is closely linked to cognitive ability, one of the potentials for predicting global achievement and success is Adversity Quotient (AQ). Adversity Quotient has four constructs based on the CORE model, namely Control, Ownership, Reach and Endurance. In the context of technical education, the mastery of AQ by polytechnic students is expected to improve their academic performance. Several previous studies have shown that there is a discrepant relationship between the Adversity Quotient and the academic performance of students in general. Thus, this conceptual paper discusses the extent to which the Adversity Quotient has the potential to boost student academic performance and help students overcome challenges during their studies. The contribution of this study is crucial to the application of AQ in student self-development activities to ensure that students are knowledgeable and resilient. This study is expected to strengthen the integration of intelligence in the National Philosophy of Education (FPK) which is the backbone of Malaysia's education flow. Further studies in the development of AQ measurement instruments need to be conducted to identify polytechnic students with low AQ problems for better and more effective guidance.

Keywords: Adversity Quotient; AQ; academic achievement; polytechnics; challenges.

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INTRODUCTION
Adversity Quotient (AQ) is a very useful new paradigm as challenges arise in all walks of life (Phoolka & Kaur, 2012). AQ variables are also relatively new in the majority of individuals (Macasaet, 2013). A person’s ability to cope with adversity in their lives and turn it into an opportunity for success is known as the Adversity Quotient (AQ) (Stoltz, 1997). The idea of AQ comes down to the question of why two individuals with the same Intelligence (IQ) and Emotional Intelligence (EQ), but handle life’s challenges in different ways (Stoltz, 1997, 2007). Good management enables students to be able to control themselves against problems and challenges. Malaysia needs an education system that is capable of building human capital in various fields and improving the country's competitiveness and development (Nik Mustapha, 2007). IQ and EQ excellence alone is not enough to produce great students (Stoltz, 1997).

The mere assessment of intellectual intelligence through academic assessments such as achievement tests does not contribute to one’s physical, emotional, spiritual and intellectual success (Shafiza & Siti Rahayah, 2011). The need for student resilience is high as the country undergoes rapid changes in the competition to overcome globalization and k-economic challenges (Abd Jall, 2008). Malaysia’s focus on the areas of Technical and Vocational Education (PTV) requires technical stream students such as polytechnic students who are capable of facing challenges. The country needs students who are not only academically competent, but capable of coping with the challenges, problems and difficulties of life (Stoltz, 1997; Stoltz & Weihenmayer, 2010). The potential for strengthening the understanding of AQ is relevant given that its theory has not been developed yet and has been proven through the relatively few studies of AQ (Rachmat, 2007). In fact, AQ studies with students’ academic achievement have indeed been suggested as advanced studies by some of the previous researchers (Almeida, 2009; D’Souza, 2006). The AQ study has expanded and across several countries of the world over the past three years (Dorji & Singh, 2019; Kundan & Sabina, 2019; Lin, 2018; Marquis, 2018; Mohd Effendi Ewan Mohd Matore, 2019a, 2019b; Mohd Effendi Ewan Mohd Matore & Ahmad Zamri Khairani, 2019; Mohd Effendi Ewan Mohd Matore, Ahmad Zamri Khairani, & Nordin Abd Razak, 2015; Suryaningrum et al., 2020; Yazon & Ang-manaig, 2019). The idea of this paper is to conceptualize the potential of AQ in relation to its ability to predict the academic performance of polytechnic students. Previous research discussions are expected to provide varied views and perspectives on the potential of AQ as a predictor of global success.
CONCEPT OF CHALLENGES

Intelligence can be defined as the ability to read, write and calculate that focuses on formal education such as schools in the pursuit of academic success (Mohd Azhar Abdul Hamid, 2007). Intelligence also means that cognitive abilities are learned from experiences that are tailored to daily life (Azizi Yahaya, Noordin Yahaya, & Zurrinhami Zakaria, 2005). There are many types of intelligence that exist in this world besides AQ. These include intellectual quotient (IQ), emotional quotient (EQ), spiritual quotient (SQ), moral quotient (MQ), verbal quotient (VQ), loyalty quotient (LQ), religious quotient (RQ), physical quotient (PQ) and balanced quotient (BQ). Adversity dilemma (difficulty) presents a more difficult challenge, and thus less people are able to cope with it. This is particularly troubling as it relates to the attitude of giving up on an individual in the face of increasingly difficult challenges (Stoltz, 2007). There are two types of challenges, namely inner adversity such as fear, anxiety, depression, loneliness, lack of confidence, health problems, insomnia, insecurity and more. However, another type of challenge is outer adversity involving external factors such as economic problems, failure in examinations, computer damage, scratched cars, natural disasters and many more. However, this challenge is something that has a negative impact or is expected to have a negative impact on something that needs attention (Stoltz & Weihenmayer, 2010). Challenges are also associated with the suffering or problems a person experience. In reality, most people experience suffering that can be categorized into four parts, namely physical, emotional, mental and spiritual suffering (Stoltz & Weihenmayer, 2010). This concept of challenge and suffering is in line with the National Philosophy of Education (FPK), which is physical, emotional, spiritual and intellectual aspects or JERI. This equilibrium is a key element in how this AQ concept has the potential to overcome and relieve suffering and challenges based on the FPK concept and the concept of suffering by Stoltz & Weihenmayer (2010).

CHALLENGES IN THE CONTEXT OF POLYTECHNIC

Previous studies in polytechnics show that the various challenges faced by polytechnic students such as peer-related challenges, overworked, lack of time to complete assignments, lack of comfortable study space, noisy lectures, limited classroom space and uncomfortable, burdened by other tasks and the use of English in the learning process (Abd. Bahman et al. 2011). In addition, studies have been conducted on the implementation of the Outcome Based Education (OBE) approach in polytechnics (Amiza, Noremy & Fadzilda, 2010), quality of teaching & learning level (Azahar, Mohd Zain & Mohd Azriman 2009), level of concern about the use of English in the teaching and learning process (GK Mariappan, Kanammah, Rajiv Raj, & Rajesvari, 2012), cost of living, transportation issues, neighborhood relationships, poor time management (Jamaluddin, Ungku Ahyu & Mustafa Kamal, 2009). Other issues include the convenience of polytechnic facilities, including levels of student satisfaction in classrooms, lectures, labs, workshops, libraries, student affairs services, administration office services, co-curriculum, canteens and cafeteria (Noremy & Fadilah, 2010), time management, finance and learning environment factors (Siti Nuur Hairul, 2012), lack of exposure to new technology, ability to tap into new knowledge, lack of equipment for practical work (Yahya, Muhammad Sukri & Hairul Anuar, 2008), and the bus service facilities are very limited, unsystematic, inconvenient and the schedule is uncertain (Zainap, Normah & Canarisa, 2012).

A previous study by Mohd Effendi Mohd Matore & Ahmad Zamri Khairani (2014) showed that polytechnic study is the most important problem selected by 252 students in seven polytechnics (difficulty level = +0.252 logits) over eleven dimensions in the Mooney Problem Check List (MPLC) using the Rasch Model. Learning problems refer to measurement of aspects of self-adjustment in institutions. It is found that the main challenges are related to their academic performance. They are afraid of failing the test or the exam, worrying about the exam, worrying about the marks in the test, not being smart enough and not spending enough time to study (difficulty level = 0.94 logits, 0.88 logits, 0.66 logits, 0.57 logits and 0.53 logits, respectively. All of these challenge items point to contributing factors that could have an impact on academic achievement. In the field of education, achieving high academic achievement is not easy, many difficulties and failures will be met. Not all students are able to meet these challenges throughout the learning process. Of course, this will affect the polytechnic learning outcomes (Karyono, 2013). Other focuses also highlight other major challenges such as English proficiency, transportation and information technology skills (Mohd Effendi Ewan Mohd Matore & Ahmad Zamri Khairani, 2015).

Thus, polytechnic students need to have the courage to face the challenges to overcome those challenges. This ability will help students improve and achieve success in line with AQ's role as a global predictor of success (D’Souza, 2006; Stoltz, 1997, 2007; Stoltz & Weihenmayer, 2010). Society is undergoing rapid changes in competition to overcome globalization and k-economic challenges (Abd. Jalil Borham, 2008). In addition, employers have a selective attitude toward choosing individuals who will work in their organization (Noor Idawati & Nooraini, 2011). Students need to be prepared with special skills in the face of challenges that are not only work knowledge (Zuhaila, Mohd Safarin, & Muhammad Syukri, 2012). The challenge is to seek technical and vocational education to train more skilled, innovative, resilient, competitive and adaptable workers in a variety of industry and employment situations (Zuhaila et al., 2012).

ADVERSITY QUOTIENT (AQ)

Adversity Quotient or AQ is a very useful new paradigm as challenges arise in all walks of life. Stoltz (1997) defines AQ as the ability of an individual to struggle to cope with and overcome the challenges, problems or difficulties encountered and turn them into opportunities for success. A person's ability to cope with adversity in their lives and turn them into an opportunity for success is known as the Adversity Quotient (AQ). AQ explains how one can withstand the challenges and their ability to overcome and handle the small and big challenges they face on a daily basis (Phoolka & Kaur, 2012). AQ is a reflection of an individual facing a challenge (Pangma, Tayrakham, & Nuangchakern, 2009). This intelligence can predict how well one can withstand the challenge and overcome them. In addition, AQ can predict who will succeed; and who will lose; which is easily give up and despair (Stoltz, 2007). It means that AQ can predict an individual's resilience and can be used to enhance the effectiveness of relationships, groups, families, communities, cultures, societies and organizations (Phoolka & Kaur, 2012). In education, AQ is the ability to continue to struggle when a student is having difficulty achieving success (Nonye, Endang & Dian, 2010).

Stoltz (1997) has developed the concept of AQ from three issues related to organizational and individual performance. The question is: (i) Why does someone with a high IQ fail so fast compared to others? (ii) Why are there organizations that are able to cope with fierce competition in business, compared to others that are failing? (iii) Why are some parents able to raise their children into useful people despite being in a drug addiction group; and (iv) Why do some entrepreneurs succeed in overcoming difficult challenges, compared to other entrepreneurs who give up and quit? This question led to the emergence of AQ exploration in humans. Humans have different capabilities to each other, including how they respond to a challenge. This reaction is greatly influenced by the experience of life and education received. The typical problems an individual face can help them learn to cope with challenges effectively. For example, the challenges of managing time and finances, coping with friends' conflicts, feelings of inferiority, peer pressure, parental divorce, competition in the workplace or many other challenges are becoming more common today. Such challenges are experienced
by most individuals. However, experience and education greatly help them to cope with the challenges that will determine their success. AQ is measured through four constructs, namely, Control, Ownership, Reach and Endurance (known as the CORE Model).

CONTROL
Control construct means how well an individual realizes that he or she can control a challenging situation (Stoltz, 1997). However, based on the views of many researchers in various contexts and countries, control constructs are defined through three main definitions, namely (i) the ability of a person to perceive himself to be able to handle and respond to challenging situations in control; (ii) the ability to believe positively and (iii) the ability of an individual to recover after experiencing a challenge or failure. Individual criteria for high Control constructs are found to respond well to challenges. They are also always positive in life and easy to recover from failure. In addition, individuals who are weak in Control constructs are found to have poor control over the challenges they face, often have negative thoughts and do not have a high level of determination in the face of challenges.

OWNERSHIP
The construct comes from two aspects, Origin and Ownership. However, Stoltz changed this construct to eliminate Or = origin, which is the scale of belonging (originality) because the origin is part of the Ow = ownership dimension. The two constructs look similar, but they are different. Origin is more about the elements to blame. However, a fair degree of self-blame is essential to educating an individual so that they do not repeat the same mistakes in the future to improve themselves. (Stoltz, 1997). Ownership construct belong to the root cause of a challenge. This construct refers to the extent to which the individual identifies the cause of the problem, who is responsible for the problem and to what extent they acknowledge the effects and consequences of facing the challenge (Stoltz, 1997, 2007; Stoltz & Weihenmayer, 2010). This construct has two main concepts, namely the explanation of the origin which means (i) the ability of an individual to explain the cause of the challenge he or she faces. The second concept, the recognition of consequences, reflects (ii) one’s ability to acknowledge the existence of challenges. The high character of Students with high scores is the ability to explain the root cause of the problem. In addition, they are also able to recognize the impact of the problem. Sometimes, it can be self-defeating, but it’s actually good to make students more accountable to challenges. Individuals with low Ownership scores are often confused about the cause of the problem. They tend to ignore the potential impact of the problem they are facing. This neglect and denial will lead to a situation of uncertainty.

REACH
Reach constructs measure how well an individual can limit the impact of a challenge on themselves. In other words, it is defined as how well an individual can ensure that the challenges they face will not affect the rest of their lives; such as the impact of health disorders, academic performance and so on (Stoltz, 1997, 2007; Stoltz & Weihenmayer, 2010). The reach construct indicators involve three key concepts, namely (i) the individual’s ability to identify the challenges he faces, not to influence the other side of his life, (ii) the individual’s ability to limit the challenge from being influenced by other problems in his life and (iii) the individual’s ability to work immediately to overcome the challenges. Individuals with a high Reach score will be able to limit the impact of a challenge on themselves. Meanwhile, individuals with low scores will let the effect go beyond the rest of them. The criterion for students to achieve high scores is the ability to ensure that the challenges they face do not affect the other side of their lives. For example; Students with high Reach scores who have problems with peers will still be able to study well and get good results in exams. Peer problems do not affect aspects of their learning. Students with low Reach scores, on the other hand, have peer problems that can lead them to lose focus on learning, anorexia and other illnesses, declining academic performance and suicide attempt.

ENDURANCE
Endurance construct measures how long a challenge can take. In other words, this construct is defined as to how far the individual is able to withstand the challenge and to what extent the problem of the challenge will continue (Stoltz, 1997, 2007; Stoltz & Weihenmayer, 2010). The three key concepts for endurance indicators are (i) the ability of the individual to anticipate the duration of the challenge to be fulfilled in his or her life, (ii) the individual’s ability to anticipate the time period in which the challenge will end in life and (iii) the individual’s ability to find a solution to the challenge. Individuals with high scores for Endurance constructs are optimistic. They believe that every problem will surely end. No challenge has the same effect forever. This is because there is space and opportunity for improvement. Challenges and causes are temporary, they will pass with time or they will disappear (Stoltz, 1997). Individuals with high scores also have the ability to predict how difficult a challenge will be in their life and when it will end. They can survive and solve the problems they face. Individuals with low scores will let the challenges or issues continue to overwhelm them, and make no effort to address the challenges that may arise due to their own passive behavior.

AQ AND ACADEMIC ACHIEVEMENT
Previous studies have shown a tendency to study whether AQ is related to students’ academic achievement (Anik & Lydia, 2006; Aristy, 2012; Cura & Gozum, 2011; D’Souza, 2006; Huijuan, 2009; Indah, 2010; Kiki, 2011; Priska, 2010; Rizqon, 2009; Sia, 2001; Williams, 2003; Yodsakan, 2008). However, the findings of the study are inconsistent with the relationship between AQ and academic achievement. A study in Indonesia by Sia (2001) shows that there was no relationship between AQ, IQ and EQ with academic achievement for high school students. This study also reinforces the findings of a subsequent study that found that AQ did not contribute to academic achievement (Anik & Lydia, 2006; Aristy, 2012; Indah, 2010; Kiki, 2011; Priska, 2010; Rizqon, 2009). However, the findings of the study were different for Yodsakan (2008), where they showed a positive relationship between AQ and academic achievement for 231 second semester students in Thailand. Huijuan’s (2009) study found that there was a significant relationship between AQ and academic achievement of nursing college students. A study by Williams (2003) explains that students have achieved high academic achievement with the improvement of school principals’ Aqs. D’Souza (2006) showed that there was a positive relationship between AQ and academic performance in primary schools in India involving school types for three different schools. In addition, there was a relationship between AQ and student achievement in mathematics for calculus subjects in the Philippines (Cura & Gozum, 2011). Given the inconsistent findings related to AQ’s relationship with academic achievement, it is important to examine the relationship of AQ with student academic achievement in the Malaysian context.

Recently in several studies related to AQ and academic performance were conducted in 2019 and 2020 widely and not focusing on polytechnics only (Hulaikah, Degeng, Sultan, & Murwati, 2020; Mohd Effendi Ewan Mohd Matore & Ahmad Zamri Khaifani, 2019; Naimnule & Asikin, 2020; Sitiria-at, 2020; Wahyuningtyas, Suyitno, & Asikin, 2020; Wardani & Mahmudi, 2019). The findings of Mohd Effendi Ewan Mohd Matore dan Ahmad Zamri Khaifani (2019) from Malaysia show that high levels of all AQ constructs. It was also stated a very weak and significant positive relationship between the scores of all AQ constructs with academic achievement in polytechnic context. This study in Indonesia by Wardani and Mahmudi (2019) aimed to discover the adversity quotient of Vocational High School students towards mathematics, which is divided into three categories namely climber (high), camper (average) and quitter
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This study by Hulahak, Degeng, Sultan, and Murwani (2020) examined the effect of experiential learning and the adversity quotient in the problem-solving ability of accounting vocational college students. The results showed that the students’ problem-solving ability differed between high and low adversity quotients, and there were interactions between experiential learning and adversity quotients that improved students’ problem-solving ability. Sitsira-at (2020) from Thailand conducted the correlational comparative study to investigated the important of adversity quotient and emotional quotient related to lifelong learning and finding the predictors of lifelong learning of Humanities and Social Sciences undergraduate students. Research results showed that adversity quotient, emotional quotient and lifelong learning were at rather high level and the positive correlation between students’ adversity quotient, emotional quotient and lifelong learning was statistically significant at .01. Adversity quotient and emotional quotient were the covariance explanation of the lifelong learning at 43.9%. This study by Munnule and Askin (2020) aimed to describe the ability of students’ problem-solving based on adversity quotient. The result revealed that learning model problem-based learning with effective peer feedback and a description of problem-solving abilities in terms of adversity quotient in the high, medium and low categories of the problem-based learning model with peer feedback had various results. Wahyuningtyas et al. (2020) aims to describe student’s creative thinking skills viewed by adversity quotient and mathematics anxiety. The result showed that (1) creative thinking skills in climber students classified creative (able to satisfy fluency, flexibility, and novelty) and less creative (able to satisfy fluency, and flexibility), (2) creative thinking skills in camper students classified less creative, they were able to satisfy fluency, and flexibility, (3) creative thinking skills in quitter students classified not creative, they were only able to satisfy fluency.

In conclusion, all these researchs brought the same idea on how the AQ had a very high potential to be implemented in academic context especially nowadays they are put the elements in pedagogical aspect. The research in various countries also had intention to categorized their respondents into different abilities.

CONCLUSIONS AND RECOMMENDATIONS

This paper proposes an important variable for education practitioners to consider, the Adversity Quotient (AQ) that is a potential predictor and catalyst for a student’s academic success. Therefore, the need to link AQ with students’ academic performance is relevant and important for strengthening FPK in an effort to provide added value to graduates. This association gives administrators a new idea of incorporating the CORE component in AQ for polytechnic student development programs. This study should be taken seriously by all policymakers and practitioners in the polytechnic because the effort to produce optimistic and competitive students is a key ingredient in the desire to improve performance and develop their potential in the workplace. This requirement is in line with FPK’s goal of developing human capital in providing a workforce that faces future challenges. The way students control themselves when faced with problems becomes a symbol of their maturity in strengthening resilience. Knowledge of AQ gives the audience an idea to replicate the study in different settings such as drug or juvenile trainers, orphans, or children. The strengthening of AQs is particularly relevant for assessing the impact of AQs on other variables in their lives. The study will provide additional empirical information across sampling and context. In this way, profiling and norms can be created to increase confidence in the data. AQ’s relationship with academic achievement will give the idea of empowering AQ through a relentless attitude in life such as the ability to solve questions in the exam, deal with peer conflicts or even change one’s self-esteem in a more positive way. In other words, academic achievement can be enhanced by students’ ability to handle the challenges of their lives. This is in line with the proposal to use AQ theory and practice to produce students who are resilient. Studies on the AQ instruments construction should be carried out in the local context to more accurately and efficiently measure AQs. In addition, group focus beyond the educational context is very welcome. Non-academic performance measurement will provide a new color in the definition of achievement. Other definitions of achievement need to be considered in such measures as spiritual achievement, co-curriculum achievement, or perhaps generic skill achievement.

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