THE INFLUENCE OF INTELLECTUAL QUOTIENT (IQ), EMOTIONAL QUOTIENT (EQ) AND SPIRITUAL QUOTIENT (SQ) AGAINST ADVERSITY QUOTIENT (AQ) ON POLYTECHNIC STUDENTS IN MALAYSIA

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Abstract

This study is aimed to investigate the influence of Intellectual Quotient (IQ), Emotional Quotient (EQ), and Emotional Quotient (SQ) against the Adversity Quotient (AQ) of polytechnic students. This integration is expected to further strengthen the National Education Philosophy (NEP) model which has so far emphasized the development of students from physical aspects, emotionally, spiritually and intellectually only. A total of 1,845 respondents from five polytechnics in Malaysia were involved in this study. Multistage stratified proportional cluster sampling technique was applied. The findings of the multiple regression model analysis showed that the combination of EQ and SQ have contributed about 32.5% ($r = 0.571$) change in the variance of AQ scores. It clearly proved that only EQ and SQ were the predictors of polytechnic students' AQ. IQ was not contributed as a predictor for AQ. AQ was also seen as a highly potential intelligence to be integrated into the NEP. The replication of the original concept of AQ from work organization to polytechnic field education has been proven to be successful and showed a consistency in the findings.

Keywords: Intellectual quotient (IQ), Emotional quotient (EQ), Emotional quotient (SQ), Adversity quotient (AQ), Influence, Polytechnics.

1. Introduction

AQ or Adversity Quotient is the term that means the ability or capability of an individual battling against the challenges, problems, or difficulties encountered and turning it into opportunities for greater success [1]. In the context of the study, AQ is a measurement of a polytechnic student's ability to survive and overcome the existing challenges and turning it into an opportunity for success. Agreement concerning the relationship between intelligence does exist [2-4] and previous studies have similarities proven that AQ has a relationship with aspects of intelligence such as IQ, EQ, and SQ [5-8]. National Education Philosophy (NEP) since over 25 years ago only placed emphasis on the goal of producing a harmonious individual from the aspects of physical (PQ), emotional (EQ), spiritual (SQ), and intellectual (IQ). The empirical studies explained that the inability of a person to handle challenges will result in negative symptoms such as pessimism, sadness, helplessness, and inactivity [9]. Although AQ was introduced in 1997 by Stoltz [1], yet this intelligence is as if ignored and isolated from other intelligence in the technical education. AQ implementation is actually seen as very relevant because the Higher Learning Institutions (IPT) are aiming to produce quality graduates from the aspect of AQ and other intelligence [10].

NEP since over 25 years ago only aim for producing a harmonious individual from the aspects of physical (PQ), emotional (EQ), spiritual (SQ), and intellectual (IQ). Unfortunately, nowadays we need an individual who has an ability to face the adversities especially for technical working environment. The inability of a person to handle challenges will result in negative symptoms such as pessimism, sadness, helplessness, and inactivity [9]. Many empirical studies shows that the polytechnic students are facing many challenges in their life [11-13]. Although AQ was introduced in 1997 by Stoltz [1], this type of intelligence is not popular as other types of intelligence. AQ implementation is actually seen as very relevant because the Higher Learning Institutions are aiming to produce quality graduates from the aspect of AQ and other intelligence [10]. The main idea behind this paper is to empower students with the integration of AQ with other intelligence in NEP in order to produce a resilient and competitive spirit workforce in the face of polytechnic transformation in fulfilling one of the 18 Critical Agenda Projects (CAP) in the National Higher Learning Strategic Plan (2011-2015) [14]. Thus, the study will examine the main intelligence in NEP such as IQ, EQ, and SQ influenced AQ among polytechnic students in Malaysia.

2. Multiple Regression Model

Multiple regression models are a statistical technique used to analyse the relationship between one criterion variable and a set of predictor variables (independent). Predictor variables (IQ, EQ, and SQ) are the factors that affect the change in the criterion variable (AQ). In multiple regression, the independent variable (X) is termed as a predictor variable while the dependent variable (Y) is termed as a criterion variable. The criterion variable (Y) score is predicted using the k predictor variable (X_1, X_2, X_3... and X_k), where $k \geq 2$. Multiple regression equation is shown as Eq. (1) where b is the regression coefficient for each predictor variable and a is a constant regression based on Chua [15].

$$Y = b_1X_1 + b_2X_2 + b_2X_3 + ... + b_kX_k + a \tag{1}$$

The results of this regression analysis are the best prediction of dependent variables based on the independent variables based on Lay and Khoo [16]. The latest previous research by Mohd Effendi and Ahmad Zamri [17] shows that AQ was correlated by EQ, IQ and SQ but they are not focusing on how the intelligences influenced AQ.

3. Logits Transformation on Rasch Model

The relationship is examined using regression multiple analysis. Based on the measures of association, one of the conditions for the use of inferential statistical analysis is that both variables must have the measurement type of interval or ratio data. However, this condition is not adhered to because the Likert scale measurement of AQ, EQ, and SQ are ordinal type of data. IQ was measured by dichotomous type of data. Thus, there is a need to transform the ordinal data into interval data through the logits by Rasch model other than to obtain a linear interval scale. The mathematical formula for the model refers to Bond and Fox [18]. The probability likelihood of a success or In $[P(\theta)] = B_n - D_i$ which means (the ability of an individual - the difficulty of an item) $\ln\left[P(\theta)\right] = B_n - D_i$.

4. Methodology

4.1. Demographic profile

An actual study was successfully implemented with a rate of return exceeding 95%. A total of 1845 instruments were collected and entirely filled up by students out of 1892 instruments that were distributed. Distribution profile shows as many as 456 (24.7%) samples are dominated by Politeknik Ungku Omar (PUO) as compared to the least dominant, Politeknik Kuching Sarawak (PKS) of 258 (14.0%). The number of samples is relatively balanced based on gender in which there are 994 male students (53.9%) and 851 females (46.1%). On the aspect of academic year, the first-year students dominated the sample around 619 (33.6%). The dominant department of studies is the Department of General Studies (JKA) with 490 (26.6%) samples. Most respondents are within the range of between 18 to 23 years old.

4.2. Sampling

Sampling technique used on the actual study is the proportionate clustered multistage stratified sampling technique. The sample size for this study was about 1,892 students with a population of 18,828 used the proportion of ten percent's of the total population of each department as proposed by Gay et al. [19]. This study involved all polytechnic students from semesters two, three, five, and six from five polytechnics according to zones.

4.3. Instrumentations

Four instruments are used in this study, namely the IKBAR instrument to test AQ with four constructs of (i) control; (ii) ownership; (iii) reach and (iv) endurance;

EQ was measured by USMEQ-i with seven constructs of (i) emotional control; (ii) emotional maturity; (iii) emotional conscientiousness; (iv) emotional awareness; (v) emotional commitment; (vi) emotional fortitude and (ix) emotional expression adapted from Muhamad Saiful et al. [20], SQ was measured by Integrated Spiritual Intelligence Scale (ISIS) with five constructs of (i) consciousness; (ii) grace; (iii) meaning; (iv) transcendence and (v) truth adapted from Amram and Dryer [21]. The IQ was measured by Ravens Advanced Progressive Matrices (RAPM) which just contained general intelligence adapted from Raven et al. [22]. The consideration covered the overall score and not calculating score of the each constructs.

4.4. Data collection and data analysis

The permission to conduct the study was obtained from the Centre for Research and Innovation and the Director for each polytechnic. Permission is also obtained from the Student Affairs Officer within each polytechnic institution, especially to gather the student data for the selection of the sample. The distribution of the instruments and the briefing were conducted face to face with the students with the help of their lecturers. It has four instruments that need to be completed by the students. The instrument is administered in two sets, Set one and Set two. The set consists of IKBAR, USMEQ - i and ISIS instruments. The Set Two consists only of RAPM instruments. This instrument is administered by two phases, the first phase (Set one) for a week and the second phase (Set two) is made for 30 minutes only during lectures. The set one takes longer because the student needs to answer calmly for the three instruments.In the first week, lecturers distributed one set of instruments and picked up again in the same week as the lecture took place twice a week. In the second week, the same lecturer gave the second set to the same student for 30 minutes to respond to RAPM. This second set of instruments is not allowed to be brought back because it involves IQ testing. The answer set from students for both sets are referred using student matrix card numbers. Scores are grouped together for both sets. The process of distributing and collecting instruments was conducted by the researcher and assisted by 160 lecturers. The students' response was analyzed into SPSS version 19.0 and using WINSTEPS version 3.71.0.1 in order to get the logits for the data. The data of logits used for multiple regression analysis.

5. Results

The actual study was successfully implemented with the return rate of 97.52% and more than 75% as suggested by Christensen et al. [23]. The data was normally distributed based on skewness and kurtosis analysis. Therefore, on the basis of data type, sample size and normality, selected analysis is Multiple Regression Analysis. The findings show only the predictors EQ and SQ were included in the regression model at $p \leq 0.05$ as compared to expected predictors, namely EQ, SQ, and IQ. The correlation for EQ and SQ with overall criterion variable was 0.571. The value of (R^2) of .270 (Model 1) showed 27% ($r = .519$) changes in the criterion variable (AQ score) was due to changes in the predictor variable, namely EQ. This meant that EQ was a key factor in polytechnic students' AQ score. The R^2 value of 0.325 ($r = 0.571$) for Model 2 showed that as

much as 32.5% change in the criterion variable (AQ score) was caused by changes in the combination of both predictor variables, namely EQ and SQ. The findings of ANOVA test results in Regression Model 2 which showed that significantly, both predictor variables were factors in AQ score [F (2, 1842) = 444,422. $p<0.05$]. Both of multiple regression models established by the criterion variable and the predictor variables were significant as per Model 1 [F (1, 1843) = 681,068. $p<0.05$] and Model 2 [F (2, 1842) = 444,422. $p<0.05$]. Results shows the significant result findings having indicated that both multiple regression models established could be generalized to the population as shown in Model 2 or Eq. (2).

$$AQ\ SCORE = 0.94 + 0.32\ (EQ) + 0.28\ (SQ) \tag{2}$$

Both of the standard coefficient regression predictor variables, namely EQ (β = 0.36, $p<0.05$) and SQ (β = 0.28, $p<0.05$), significantly indicated that these variables were the factors in the achievement of AQ score of polytechnic students. The tolerance value and VIF indicated a value of 0.689 and 1.451 respectively. In view of the tolerance value of (0.689) being reported was nearing to one while the VIF value of (1.451) was less than 2.50, hence the phenomenon of multicollinearity did not exist between the independent variables reviewed in the study. Result shows the predictor variable which was not included in any model and that is IQ. Nonetheless, although SQ has a significant value of $p<0.05$, this variable has a *beta in* value (estimated *beta* value when it was included in the multiple regression model) which was too small, so the predictor variable SQ would be eliminated from the model by stepwise procedure. The correlation value of partial correlation showed the correlation between each predictor variable and the criterion variable. The findings found that the correlation between variables was not strong (<0.70). The model proved that the study data had no multicollinearity problem because the collinearity tolerance was in excess of 0.10.

In conclusion, the findings showed that significantly both predictors, namely Emotional Intelligence (EQ) (β = 0.36, $p<0.05$) and Spiritual Intelligence (SQ) (β= 0.28, $p<0.05$) were the factors in Adversity Quotient (AQ) of the polytechnic students. The analysis results showed that significantly, EQ (β= 0.52, $p<0.05$) single-handedly accounted for 27% (r = 0.519) changes in the variance of AQ scores [F (1, 1843) = 681,068. $p<0.05$]. The combination of both variables EQ (β = 0.36, $p<0.05$) and SQ (β= 0.28, $p<.05$) accounted for 32.5% (r = 0.571) changes in the variance of AQ scores [F (2 , 1842) = 444,422. $p<0.05$]. Based on the results, EQ and SQ were the predictor variables for the AQ of polytechnic students. Meanwhile, the variable IQ was not a predictor variable for the AQ of polytechnic students.

6. Discussions

The relationship between AQ and EQ is already supported conceptually and in the literature [1, 24, 25]. If the students are facing challenges, EQ can help them be motivated and optimistic as well as have high hopes in achieving their goals [26]. This finding is consistent with previous findings by Kumbanaruk and Maetheeponkul [5] that there is a positive relationship between AQ and EQ among 150 Chinese businessmen in Thailand and 154 Chinese businessmen in China. In fact, the proposal to connect AQ with other cognitive aspects such as EQ like study by Williams [27] mentioned that this was very apt in the context of

polytechnics. The relationship between AQ and SQ is not discussed conceptually and theoretically [1, 25]. In the context of education, SQ is no stranger in NEP where the emphasis is on a harmonious self-development from the spiritual aspect. Previous studies by Ridwan et al. [28] shows that IQ, EQ, and SQ indeed have a significant influence on the ethical attitude of an individual student. The literature also indicates the potential existence of elements of SQ and AQ in the face of work ethics of human resources [29]. Therefore, the findings on a moderately positive relationship between AQ and SQ intelligence among polytechnic students in Malaysia strengthen the argument that the relevance of SQ in the intelligence trio is capable of developing the potential of polytechnic students in a comprehensive and balanced way. SQ having operating the IQ and EQ effectively is the supreme intelligence that is a must-have by an individual in the context of their daily lives [30]. Theoretically, the equality of SQ and AQ is very clear when students can question themselves as to why and how to face challenges. It is in accordance with the conceptualisation of ownership construct in this study, namely the ability to explain the causes of the challenges that one faces. The personal development of students with high AQ would be meaningless if one is fragile of spirituality and spiritual aspects.

Specialised literature on the relationship between AQ and IQ is very limited. IQ alone does not determine the success of a person in which AQ is also complementing both [1]. However, the study findings in the context of this polytechnic are totally opposite from the concept in association with AQ and IQ. IQ is the intelligence associated with cognitive processes such as thinking power, the power to connect and evaluate or consideration. Cognitive thinking power is different with emotional feelings such as EQ and spirituality such as SQ. IQ intelligence is more of testing one's potential towards existing accumulated knowledge [31]. The quality of EQ is very different from IQ. Generally, IQ is unchanged while intelligence can be easily learned [32]. Thus, it can be concluded that IQ is not a predictor of students' AQ as a total but instead this success should be seen more widely in further studies. Success can be refined in terms of achievement in co-curriculum, personal development, leadership, creativity, music, invention and innovation, and much more. IQ in this context may not be seen as a success as conceptualised [1]. Individuals with high IQ scores are usually said to have high intelligence. However, success in life is not determined by how high one's IQ [33]. The IQ ability of a polytechnic student has no relevance to the ability or capability of a student to overcome challenges, problems, or difficulties faced. This means that a student with high IQ does not necessarily have high AQ ability and vice versa. Instead, the ability of polytechnic students fighting to meet the challenges is more closely linked to their emotional and spiritual intelligence.

7. Conclusions

This paper has contributed a finding that intelligence, namely SQ, is a predictor of AQ as compared to only IQ and EQ as stated by theory. It clearly demonstrates the potential and ability of AQ in strengthening the NEP model for the personal development of polytechnic students. The upcoming polytechnic transformation requires the students have more fighting spirit and be strong to face the 21st century challenges. The NEP which had long since been the backup for the

national education system should be recommended a review in order to allow the AQ to be implemented in the technical and vocational philosophy. The potential shown by AQ demonstrates its ability to be at par and of equal importance with other intelligences in the existing education philosophy.

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