

A Study Investigating the Influence of Demographic Variables on Adversity Quotient

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ABSTRACT

Due to the influences of the development of information transmission and internationalization, enterprises in Taiwan have faced unprecedented difficulties; therefore, the ability to face adversity and pressure resistance are particularly important. When people face various work challenges in workplaces, those who are able to adapt themselves to the pressure and predicament of work, solve them, and further fulfill their potential, can successfully complete their work and tasks. This study selected workers in Taiwan as the research subjects, and used convenience sampling to distribute 500 questionnaires, with 307 questionnaires returned. This study used demographic variables and adversity quotient to perform ANOVA. The main purposes of this study are to determine the factors affecting adversity quotient, understand the adversity quotient of enterprise workers in Taiwan, and propose suggestions for them. The research results showed that, age and seniority have a significant effect on adversity quotient, while gender and educational background do not have a significant effect on adversity quotient.

Keywords: *Adversity Quotient, ANOVA, Demographic Variables*

INTRODUCTION

Research Background and Motives

At present, industries in Taiwan are impacted by the low cost labor of undeveloped and developing countries, strong economic advantages of global enterprises, and the vicious competition of marketing capability. Therefore, enterprises in Taiwan suffer from the difficulties of profit decline and financial crisis. In order to immediately reduce costs, enterprises usually adopt the strategies of pay cuts, layoffs, and unpaid leave to reduce financial burden. The latest survey indicated that as many as 33.5% of the people in Taiwan are facing the condition of “frequent unpaid overtime.” Overtime has become a common phenomenon. Employers usually use the “system of job responsibility” to explain the phenomenon of overtime. However, such a condition has made enterprise employees in Taiwan face working environments of high pressure.

In a high pressure working environment, employees usually experience work pressure and difficulties. The failure to properly handle frustration and predicaments may affect physical and psychological health, and if the situation worsens, employees may even be devastated. Therefore, in such a negative environment, the ability to face adversity and pressure resistance seem to particularly important. If enterprise employees have stronger pressure resistance, they are able to adapt themselves to work pressure and achieve organizational objectives. The “Adversity Quotient (AQ)” discussed in this study is used to measure how people respond to adversity, as well as their ability to deal with and overcome adversity (Stoltz, 1997; Shen, 2013, Shen and Chang, 2009). Therefore, AQ can be used to

understand workers' adaptation to work pressure and encourage them to fulfill their potentials, aggressively face pressure, and meet expectations.

Therefore, this study used "AQ" of enterprise employees in Taiwan as the research theme, and investigated this theme from various perspectives. It is hoped that this study can determine the causes leading to the differences in AQ. The research purposes are to clarify the factors affecting AQ, as well as to propose practical suggestions to enterprises in Taiwan, in order to improve the work performance of enterprise employees in Taiwan.

Research Purpose

Based on the aforementioned background and motives, this study intends to investigate the AQ of enterprise employees in Taiwan. By measuring AQ, this study understood the AQ of enterprise employees, as well as their ability to face adversity. Moreover, the causes leading to the differences in AQ could also be understood using pairwise comparison between AQ and demographic variables.

As stated in the said research background and motives, the research purposes of this study are, as follows:

1. To investigate the AQ of enterprise employees.
2. To investigate the influence of different demographic variables on AQ

LITERATURE REVIEW

Based on the aforementioned research motives and purposes, this section mainly investigated the connection between workers' AQ and life background in Taiwan. As a result, this study reviewed and summarized relevant theories, as proposed by foreign and domestic scholars, and investigated relevant foreign and domestic studies on AQ and demographic variables, respectively, in order to clarify the definitions of the various variables and develop the research framework.

Studies concerning Adversity Quotient (AQ)

1. Origin of AQ

Paul G. Stoltz (1997) integrated the results of more than 500 investigations performed by dozens of scholars as the theoretical basis, and proposed the Adversity Quotient (AQ) based on the concepts of three sciences, cognitive psychology, and mental and neurophysiological neuroimmunology. The so-called AQ is to measure the standard of people's responses to adversity, and to predict which people can overcome adversity and which cannot withstand the test. AQ can also be used to understand whether people are able to fulfill potential and achieve objectives. AQ can also be used to predict which people will give up halfway and which will persist to the end for their objectives (Stoltz, 1997).

Studies of cognitive psychology showed that, those who attribute setbacks to themselves tend to be tortured by adversity, while those who attribute them to external causes and suggest that making efforts can change everything are able to keep moving forward. Responses to adversity affect individual efficiency performance and success (Seligman, 1995; Rotter, 1966). Studies of neuropsychology found that, the brain structure can form habits, which can be immediately interrupted and changed. Once people's habits are intentionally changed, they will discard their old habits and accept new ones (Marc, 1988). Studies of mental and neuroimmunology showed that, there is a direct relationship between responses to frustration and physical and psychological health. AQ will affect immune functions, postoperative recovery, and the chance of suffering from critical illness (Bartifai and Schultzberg, 1993).

2. Components (Dimensions) of AQ

The components of AQ include “CO₂RE,” which integrates the theories of amended learned helplessness and self-control ability, as proposed by Seligman et al. (1995), with the concept of responsibility attribution. However, the composition (factors) of CO₂RE determines AQ score. Upon further investigation, individuals can understand how to improve their AQ. The explanations of the factors are given, as follows:

C denotes control, and represents “How do individuals perceive their own control ability for adversity and frustration?” The key is “perception.” The perception of self-control ability is very important, and those who do not have control ability can easily dash their hopes, which stop their actions. On the contrary, those who have control ability believe that life can be changed, hold a positive attitude, and can turn adversity into opportunity (Chavat, 1997; Anonymous, 1999; Fitzgerald, 2000).

O₂ denotes origin and ownership, and represents “Who or what causes adversity and frustration?” and “What responsibility should I take for the occurrence of adversity and frustration?” The higher the score of O₂, the more likely the individuals know to avoid unnecessary remorse and understand their own responsibility attribution.

R denotes reach, and represents the “Influence of adversity and frustration on individuals’ other living fields.” If adversity and frustration invade individual life, negative emotions and burden will be increased; however, distorted views caused by frustration may prevent individuals from taking necessary actions, thus, affecting their life.

E denotes endurance, and represents “How long will adversity and frustration last in individuals?” or “How long will the causes of adversity and frustration last?” The explanation is “Individuals will attribute to their lack of ability (permanent cause) or their lack of effort (temporary cause).”

3. Studies concerning AQ

Lin (2001) selected the managers of business operations of branches of chain stores as samples, and used gender as a variable, and found that, the AQ score of male managers was significantly higher than that of female managers. Chen (2003) selected enterprise employees as research subjects, and found that gender did not have a significant effect on their AQ. However, some of the demographic variables (e.g. age, level of education, seniority, and job title) have a significant effect on AQ. Wei (2008) selected life insurance agents as samples, and found that demographic variables (e.g. age, level of education, seniority of service, job title, and marital status) have a significant effect on AQ. Lee (2008) investigated the mentors of elementary schools, and found that gender, age, seniority of service, and level of education of teachers have a significant effect on their EQ, AQ, and class management performance. Shen and Chan (2003) also found in their study on employees of traditional industries that, origin and ownership, reach, and endurance in AQ are the main factors affecting work pressure; however, control has no affect. This result showed that, the control ability of employees in traditional industries does not have a significant effect on work pressure. However, origin and ownership have a significant positive effect on work pressure, and endurance has a negative effect on work pressure.

According to the literature review above, this study proposes H1:

H1: *The difference in demographic variables has a significant effect on AQ.*

H1a: *The difference in gender has a significant effect on AQ.*

H1b: *The difference in age has a significant effect on AQ.*

H1c: *The difference in seniority has a significant effect on AQ.*

H1d: *The difference in educational background has a significant effect on AQ.*

Based on the literature review and hypotheses proposed above, the research framework was developed, as shown in Figure 1.

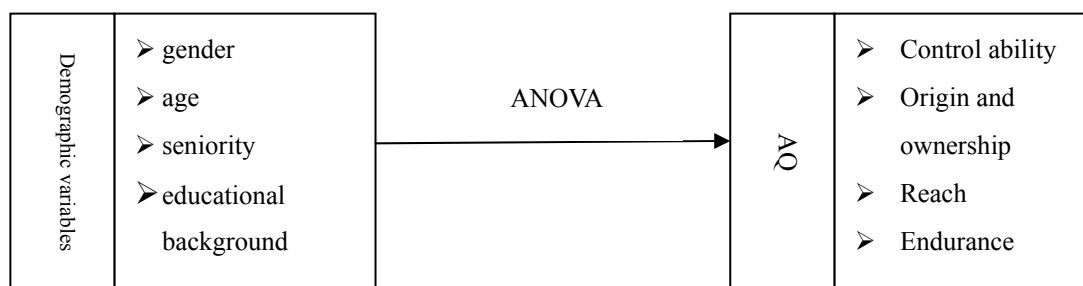


Figure 1: Research Framework

RESEARCH DESIGN

Operational Definitions of Research Variables

The questionnaire designed in this study includes two parts: basic personal information and AQ. Assessment of the variables was performed based on scales of relevant studies. In addition, the questionnaire was amended according to the needs of this study. The conceptual definitions of this study are as shown in Table 1.

Data Collection

The data collection included two parts. First, 38 questionnaires were used to conduct pretesting and ensure that the research questionnaire could be used as the formal questionnaire. Secondly, the formal questionnaires were distributed and returned.

Table 1 Conceptual Definitions of Variables

Dimensions	Variables to be assessed	Explanations of the dimensions	Source of assessment tool
AQ	C control ability	Ability to handle and control adversity.	AQ Scale (Stoltz,1997)
	O ₂ origin and ownership	Cause of adversity, origin, and ownership. Being brave enough to take responsibility, rather than to blame oneself when faced with adversity.	
	R reach	Individual aspects and range affected by adversity.	
	E endurance	Duration of frustration and continuous depression caused by adversity.	
Demographic variables	Gender	Gender of the subjects.	Compiled by this study
	Age	Age of the subjects, including under 30 years old; 31-40 years old, 41-50 years old, and 50 years old and above	
	Seniority	Seniority of the subjects, including less than 3 years, 3-5 years, 5-10 years, greater than 10 years	
	Educational background	Educational background of the subjects, including (vocational) senior high school and under, college, and graduate institute	

1. Pretest Analysis

Before the formal questionnaires were distributed, pre-testing was performed. The students who had worked were invited to a classmate reunion to complete the questionnaires. The researcher tested whether

the descriptions of the questionnaire can fully express their meanings by communicating with the subjects. After the pre-test questionnaires were returned, Cronbach's α coefficient and item analysis were used to assess questionnaire reliability and internal consistency among the various items. The analysis showed that, the Cronbach's α of various dimensions was > 0.7 . According to Hair et al. (1998), Cronbach's α coefficient > 0.7 is the assessment indicator of good reliability. Therefore, the internal consistency of the questionnaire was good.

2. Questionnaire Distribution and Return

This study selected workers in Taiwan as the research population, and used convenience sampling to distribute a total of 500 questionnaires, with 319 questionnaires returned. After 12 incomplete questionnaires were excluded, there were 307 valid questionnaires, for a valid return rate of 63.8%.

There were 164 male and 143 female subjects. In terms of age distribution, 36.5% of the subjects were under 30 years old, 27% were aged 31-40, 25.7% were aged 41-50, and 10.7% were above 50 years old. In terms of the distribution of seniority, 25.1% of the subjects worked for less than 3 years, 23.5% worked for 3-5 years, 24.4% worked for 5-10 years, and 27% worked for more than 10 years. In terms of educational background, most (65.5%) were college graduates, 10.7% were masters, and 23.8% were (vocational) senior high school graduates. The basic information of the samples is as shown in Table 2:

Table 2 Analysis on the Basic Information of Samples

Variables	Sample characteristics	Frequency	Percentage %	Variables	Sample characteristics	Frequency	Percentage %
Gender	Male	164	53.4%	Seniority	Less than 3 years	77	25.1%
	Female	143	46.6%		3~5 years	72	23.5%
Age	Under 30 years old	112	36.5%		5~10 years	75	24.4%
					More than 10 years	83	27%
	31~40 years old	83	27.0%	Educational background	(Vocational) senior high school and under	73	23.8%
	41~50 years old	79	25.7%		College	201	65.5%
Above 50 years old	33	10.7%	Graduate institute		33	10.7%	

3. Research Method

This study used statistical software SPSS for Window 12 to process and analyze data, and applied the statistical methods of descriptive statistical analysis, reliability analysis, Pearson correlation analysis, and ANOVA. In terms of validity, this study used statistical software AMOS-5.0 to perform confirmatory factor analysis.

RESEARCH RESULTS

Reliability Analysis

This study used Cronbach's α coefficient to analyze the reliability of AQ, as summarized in Table 3. As a whole, the reliability level of the AQ scale exceeded the acceptable standard of 0.7, as recommended by Hair et al. (1998), suggesting that the reliability of various items in the questionnaire was acceptable.

Validity Analysis

AQ is a matured theory thoroughly investigated by scholars and expert validity has been confirmed. This study further investigated the construct validity. During investigation of the constructs of theories, it

is necessary to consider comprehensiveness and exclusiveness. Convergent validity investigates comprehensiveness, while discriminant validity investigates exclusiveness (Rong, 2009). This study used confirmatory factor analysis to test the construct validity of various dimensions, and used an assessment model to test the goodness of fit of the model, as well as to test whether the convergent validity and discriminant validity of various dimensions were acceptable.

Table 3: Reliability Analysis

Variables to be assessed	Cronbach's α
AQ	0.920
Control	0.849
Origin and Ownership	0.732
Reach	0.831
Endurance	0.790

The results of the second-order confirmatory factor analysis on various dimensions are summarized in Table 4:

Table 4: Second-order Confirmatory Factor Analysis

Dimensions	AGFI	NFI	CFI	RMR	Factor loading and p value of various items
AQ	0.842	0.849	0.957	0.067	> 0.6; reaching the significance

As shown in the above Table, the goodness of fit indicators AGFI, NFI, and CFI were all > 0.9 (ideal level), and RMR was < 0.05 (acceptable). Moreover, the p value of the factor loading of the various assessed items reached significance, suggesting that convergent validity exists in the items of various dimensions.

This study tested discriminant validity according to the suggestion of Anderson and Gerbing (1988). The method is: restricting the correlation coefficient of two dimensions to 1 and performing Chi-square different testing on the restricted model and the unrestricted original assessment mode. If the Chi-square difference is large, and reaches the significance level, there is a significant difference between the two models. If the Chi-square difference of the unrestricted model is smaller, the correlation of potential characteristics is lower and discriminant validity is higher (Chang, 2005; Bagozzi and Phillips, 1982). The Chi-square difference of the various potential characteristics in this study is as shown in Table 5. According to the data of Table 5, when the correlation coefficient of two dimensions was restricted to 1, the Chi-square value of the restricted model was larger than that of the unrestricted model, and Chi-square difference reached significance. Therefore, the discriminant validity of dimensions of AQ was good.

Table 5: Results of the Discriminant Validity Analysis

Model	χ^2	DF	$\Delta\chi^2$
AQ model			
Unrestricted model	742.151	169	
The correlation coefficient of control and origin and ownership was restricted to 1	829.840	170	87.689***
Unrestricted model	659.991	169	
The correlation coefficient of control and reach was restricted to 1	764.355	170	104.364***
Unrestricted model	409.862	169	

The correlation coefficient of control and endurance was restricted to 1	519.714	170	109.851***
Unrestricted model	717.113	169	
The correlation coefficient of origin, ownership, and reach was restricted to 1	832.573	170	115.640***
Unrestricted model	479.912	169	
The correlation coefficient of origin, ownership, and endurance was restricted to 1	582.591	170	102.678***
Unrestricted model	879.015	169	
The correlation coefficient of reach and endurance reach was restricted to 1	1054.370	170	175.355***

Descriptive Statistics

The descriptive statistics of the research samples are as shown in Table 6 and Figure 2:

Table 6: Descriptive Statistics of AQ

	Number	Minimum	Maximum	Mean	SD
AQ	307	52	176	132.2182	20.7743

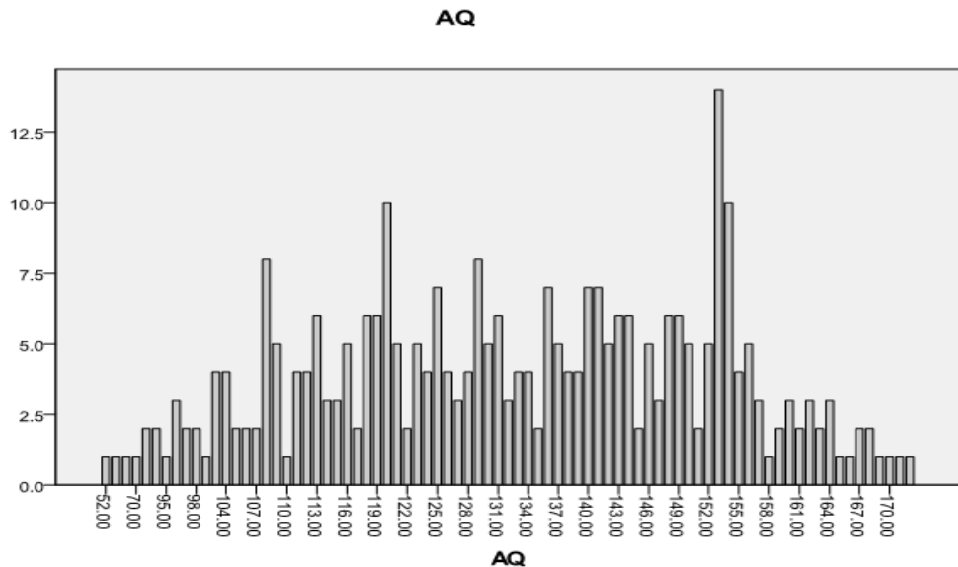


Figure 2: Frequency Distribution of AQ

Mean Comparison

This study employed One-way ANOVA and t-test to analyze whether AQ was affected by demographic variables, as shown in Table 7.

Table 7: ANOVA and t test

Demographic variables	Sample characteristics	Mean	Significance
Gender	Male	133.2134	0.367
	Female	131.0769	
Age	Under 30 years old	126.2946	0.000
	31~40 years old	132.7952	
	41~50 years old	140.3418	
	Above 50 years old	131.4242	
Seniority	Less than 3 years	123.6494	0.000
	3~5 years	128.9444	
	5~10 years	139.1867	
	More than 10 years	136.7108	
Educational background	(vocational) senior high school and under	134.1370	0.091
	College	132.7164	
	Graduate institute	124.9394	

As shown in Table 7, the difference in age and seniority had a significant effect on AQ (p value < 0.05). In addition, as the sample size of each group was different, Scheffe post hoc comparison was performed, as shown in Table 8:

Table 8: Analysis on the Results of Post Hoc Test

Variables	Post hoc test
Age	41~50 years old >30 years
Seniority	5~10 years >3~5 years >less than 3 years
	More than 10 years >less than 3 years

As shown in Tables 7 and 8, the difference in gender and educational background did not have significant effect on AQ. In terms of age, the AQ of the subjects aged 41-50 was significantly superior to that of those aged 30 and under. In terms of seniority, the AQ of the subjects who worked for 5-10 years was the highest, which was significantly superior to those who worked for 3-5 years. In addition, the AQ of the subjects who worked for more than 10 years was significantly superior to that of those who worked for less than 3 years.

CONCLUSION AND SUGGESTIONS

Conclusion

Based on the data analysis of hypothesis verification, this study provided research results and discussions, and proposed suggestions and research limitations. Table 9 shows the results of the verification of the research hypotheses.

Table 9: Research Hypotheses and Empirical Analysis Results

Hypotheses	Hypothesis content	Empirical results
H1	The difference in demographic variables has a significant effect on AQ.	Partly supported
H1a	The difference in gender has a significant effect on AQ.	Not supported
H1b	The difference in age has a significant effect on AQ.	Supported
H1c	The difference in seniority has a significant effect on AQ.	Supported
H1d	The difference in educational background has a significant effect on AQ.	Not supported

1. The difference in gender does not have a significant effect on AQ

This research result is different from that of Stoltz, P.G. (1997; 2000). This study suggested that AQ is a psychological test; hence, it cannot be simply determined by physiological gender, and other non-biometric features should be included for observation. Explaining AQ from masculine or feminine traits should better conform to contemporary environments.

2. The difference in age has a significant effect on AQ.

This result showed that, AQ increases with increasing age, suggesting that AQ can be enhanced through learning. Stoltz (1997) also proposed an approach to change AQ, namely, "LEAD procedures." L denotes listen: listening to the responses of adversity; E denotes establishing accountability: exploring the causes of adversity and determining which responsibilities should be taken during the improvement process; A denotes analysis of evidence: analyzing the evidence and clarifying the influence of problems and responsibility attribution; D denotes action: taking the necessary actions. Therefore, providing individuals engage in learning, their AQ can be trained.

3. The difference in seniority has a significant effect on AQ.

According to the post hoc comparison, this study found that the AQ of workers who worked for a longer period of time was higher. This study suggested that, when workers do the same job for a longer period of time, their ability to face adversity at work can be gradually trained. Therefore, their AQ will be superior to that of those with less work experience. When workers do the same job for too long (more than 10 years), they will start to become complacent, and their AQ will decline.

4. The difference in educational background does not have a significant effect on AQ

This result showed that, educational background does not have any effect on AQ. This study suggested that AQ is accumulated through life experience. Individuals with a lower level of education may be exposed to society earlier and accumulate more work experience. Therefore, their AQ is higher than that of those with a higher level of education.

5. Discussion on AQ

The average score of AQ of the research samples was 132. According to the book "Adversity Quotient" by Stoltz (1997), the AQ of the research subjects was average, suggesting that most workers in Taiwan are able to face predicaments in work, as well as fulfill their own potential.

Suggestions

Paul Stoltz (1997) suggested that, the higher the AQ, the more likely individuals will flexibly face adversity, aggressively accept difficult challenges, fulfill creativity to determine solutions, and they will be unyielding and brave in the face of frustration. On the contrary, people with lower AQ will feel frustrated and lost, complain about everything, lack creativity, have lower self-esteem, give up halfway in everything, and eventually achieve nothing. Based on the above, this study proposed the following suggestions:

1. Training of AQ

Workers are advised to use the AQ scale to test their standard responses to adversity and improve their AQ through educational training. AQ is individuals' ability to respond to adversity, and ability can

be improved through training and learning. Therefore, workers are advised to better understand LEAD procedures and use the AQ scale to analyze their own weakness in response to adversity and improve it.

2. Relationship between Gender and AQ

Traditional physiological gender can no longer be used to explain the difference in AQ. Therefore, future researchers are advised to investigate AQ based on the concept of gender roles. They may investigate AQ from psychological masculine or feminine traits, and research breakthroughs may be made.

Research Limitations

Although the researcher endeavored to conduct this study strictly and comprehensively, limitations and deficiencies remain. As the selection of research samples was limited, this study did not select workers from different places or of different attributes as the samples. A part of the empirical analysis results was not as expected; hence, the application of results was limited. Future studies may investigate the AQ of workers from various industries and of different work attributes from a more comprehensive perspective.

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