

Relationship between Demographic Factors and Emerging adult's Academic Achievement

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Abstract

This study examines the impact of demographic factors on the academic achievement of students during their emerging adulthood. The sample includes 264 students between the ages of 18 to 25 years from Islamia University Bahawalpur and Bahauddin Zakariya University, Multan, Pakistan. Demographics factors are measured using Student Demographic Survey (SDS), and academic achievement (AA) is measured by Grade Point Average (GPA). Partial least square based on structural equational modelling technique (PLS-SEM) was used to analyse the data. The results confirmed the significant positive relationship between age, gender, mother's education, location, parent's income and academic achievement. This study concludes that female academic achievement is better compared to male and educated parents also contributed to enhancing the emerging adult's academic achievement. Students with financially rich backgrounds are better performers in their academic pursuits than those from poor background. In addition, large family size also had adverse effects on academic performance.

Keywords: Demographic factors (DF), emerging adulthood (EAH), academic achievement (AA), partial least square (PLS).

1. Introduction

The importance of educational success cannot be undermined. This is the reality that scholarly achievement is powerfully connected to the positive outcomes valued by society. Adults who are academically successful are more likely to be employed; therefore, it is necessary to gather data relating to the elements of educational quality. Analysis of the necessary instructional aspects may be a basis for valuating educational institutes (Leenaars & Lester, 2006). Thus, academic achievement has been defined as the extent to which learners gain knowledge, skills and talents which the teacher pursues to teach or give to the students

(Ysseldyke, 2001). Academic success assessment can be thought of as a collectively vital educational evaluation. Constant assessment on students' academic success throughout their academic life and examining its actual issues is one among the vital and inevitable bases of an educational system enhancement, particularly within universities (Baba, Aliata, & Patrick, 2013). Consequently, there has been a seamless interest towards the sort-out of actual predictors of academic achievement in higher education (Garkaz, Banimahd, & Esmaeili, 2011). According to Lantieri (2009), today a strong public demand has risen all over the world for colleges and universities to implement effective educational approaches that can enhance not only academic success, but also improve health, prevent problem behaviours, and prepare emerging adults well for the working life as well as being responsible world citizen. As such, the emerging adulthood (EAH) is considered as a period of transition between the ages of 18 to 25 which is the same range as students who are preparing to get enrolled in colleges and universities. Hence, Arnett (2000) termed these individuals or students within the age range of 18-25 years as emerging adults. This is the age when an adolescent experiences many challenges such as moving away (physically and/or emotionally) from their native home and family without settling down or marrying. Based on Arnett's theory, emerging adults is the development period and they neither consider themselves as adolescence nor adulthood. They explore their identity for work, love and in the view of the world, focus on the self, perceived in stability due to changes in the status, relationships, work, and education. Therefore, this stage is also called the age of possibilities (Arnett, 2014).

Literature on academic achievement showed that there are numerous factors that affect academic performance of emerging adults. These embrace student's individual characteristics, family background, gender, age, motivation, social, culture finance, community characteristics, institutional characteristics and other demographic factors. These elements strongly impact on the student's performance, however, these factors differ from individual to individual and country to country (Alhajraf & Alasfour, 2014; Ogenler & Selvi, 2014; Tomul & Polat, 2013; Yousefi, Talib, Mansor, Juhari, & Redzuan, 2010). The proper exploration regarding the role of these demographic factors embedded back in the 17th century. These factors were generally mentioned under the umbrella of demography (Ballatine, 1993). According to Lee and Schuele (2010)

"The term demographic refers to particular characteristics of a population. The word is derived from the Greek word for people (demos) and picture (graphy) and demographic information provides data regarding research participants and is necessary for the determination of whether the individuals in a particular study are the representative sample of the target population for generalization purposes" (p. 347).

Research on the academic achievement proposes that it has a relationship with some demographic characteristics. According to Dayioglu, and Turut-Asik (2007), Cole and Espinoza (2008), and Jaeger and Eagan (2007), gender have a strong effect on student's academic achievement. Numerous studies demonstrated that female emerging adults perform better than male (Asthana, 2011; Baba et al., 2013; Caro et al., 2009; Garkaz, Banimahd, & Esmaeili, 2011). Kessels, Heyder, Latsch, and Hannover, (2014) reported that fewer male students enter higher educational institutions as they achieved lower grades than girls. Ahmad, Jelas and Ali (2010) specified that there were variances in the cognitive-motivational function of male and female in academic setting and girls were found to have an extra adaptive attitude towards educational tasks. However, Newell and Reilly (1996) stated that for Science subject, boys

tend to perform better than girls, however, in reading and writing girls took the lead. Keith, Byerly, Floerchinger, Pence, and Thornberg (2006) found a positive relationship between age and academic performance. On the one hand, some studies found an inverse relationship between age and students' academic performance (Cheesman, Simpson, & Wint, 2006; & Kaur, Chung, & Lee, 2010).

Studies also showed that family factors such as parents' education and occupation, place of residence, parental support, and parents' socio-economic status (SES) are vital factors that influence students' academic achievement (Acharya & Joshi, 2009; Phinney, Dennis, & Chuateco, 2005; Bonga, 2010; Imran, Nasor, , & Hayati, 2013; Alam, Billah, & Alam, 2014; Diaz 2003; Engin-Demir, 2009). For example, Jeynes (2002) reported that students who came from low family socio-economic status have a tendency to get lower GPA compared to those from higher socio-economic status (Ali, Haider, Munir, Khan, & Ahmed, 2013; Nasir, 2012; Ogenler & Selvi, 2014; Yousefi, Talib, Mansor, Juhari, & Redzuan, 2010).

Likewise, studies have also established a significant relationship between parents' education and academic achievement. These studies concluded that students who have parents who are educated perform better than those from non-educated parents because the latter can communicate and help their children in academic and other activities (Acharya & Joshi, 2009; Bonga, 2010; Imran, Nasor, & Hayati, 2013; Islam, 2014; Krashen, & Brown, 2005). Nasir (2012), Nuthana (2007) and Umunadi (2009) found variances in urban and rural student's educational achievement. According to them urban students' academic achievement are better than rural. However, Singh and Thukral (2010) and Waters, Hughes, Forbes, & Wilkinson (2006) found there were no differences in the educational achievement of urban and rural students.

Based on the above discussion and evidence from the literature in which numerous studies support the link between DC and AA, however, some studies showed no relationship between some demographic factors and academic success. This mixed results offer support to revisit this relationship where DC may have a positive impact on academic achievement by using partial least square based structural equational modelling technique (PLS-SEM).

2. Research Objective

The purpose of this study is to examine the effects of demographic factors such as gender, age, locality, family size, parent's income, father's education, mother's education on university students' academic achievement. Thus, the main objective of this study is to examine the effects of demographic factors on the academic achievement among emerging adults.

3. Methodology

The respondents for this study were 264 students from Islamia University Bahawalpur and Bahauddin Zakariya University Multan, Pakistan. The random sampling technique was used to select the sample. The nature of the study was descriptive. In this study, student Demographics Survey (SDS) was used to retrieve background information on emerging adults. SDS includes the information on gender, parents' income, parents' education level, locality (urban/ rural) and family size. Academic achievement was measured by Grade Point Average (GPA) of students from their university record. Partial least square based structural equational modelling technique (PLS-SEM) was applied to analyze the relationships between the variables in this study.

Measurement model

This model shows the relationship between independent variables i.e. demographic factors and its formative indicators.

$$\eta_{1i} = \beta_{F.S} F.S + \beta_{Gender} Gender + \beta_{P.income} P.inc + \beta_{Loc} Loc + \beta_{F.Edu} F.Edu + \beta_{M.Edu} M.Edu + \beta_{Age} Age + \epsilon_{1i}$$

Where

η_{1i} Latent exogenous variable $\beta_{F.S}$ path co-efficient

ϵ_{1i} random disturbance term

- F.S* Number of children in one family including those who are studying
- Loc* Residence of children in urban or rural area if urban assigns 1, if rural then 0
- F. Edu* Qualification of father in terms of primary, secondary or college/university education
- M. Edu* Qualification of mothers in terms of primary, secondary or college/university
- P.income* Earnings of parents in Pakistan currency
- Gender* If student is male then assign 0 and if student is female then assign 1
- Age* Age of students in numbers

The mathematical equation of endogenous variable i.e. academic achievement is given below.

$$\eta_{2i} = \beta_{GPA} GPA + \epsilon_{2i}$$

η_{2i} Latent endogenous variable β_{GPA} path co-efficient

ϵ_{2i} random disturbance term

GPA = score of students between 2.00 and 4.00 grade point average

Structural model

The structural model represents the constructs and the path between them.

The main objective of this study, impact of demographic characteristics (DF) on academic achievement are measured by:

$$\eta_{2i} = \beta_{\eta_{1i}} \eta_{1i} + \epsilon_{2i}$$

Where

- η_{2i} = endogenous latent construct 1 i.e. academic achievement
- η_{1i} Latent exogenous variable i.e. DF (demographic factors)
- ϵ_{2i} random disturbance term

The SmartPLS version 3.2.1 is used to analyze the data for descriptive statistics, evaluation of measurement models and structural models. Each of these is now discussed.

4. Results

Descriptive statistics

Table 1 shows seven categories of Demographic factors of emerging adults; Gender, Age, Loc, F.S, P.income, F.Edu, M.edu. As there are no extreme values in the data set arithmetic mean is used as a measure of central tendency rather than median. The measure of dispersion used in this study is standard deviation which is calculated in number having value in an original unit of data (Rs, %, number). The descriptive statistics revealed that GPA of emerging adults falls within the range of 2.3 to 4.0 and the average GPA is 3.36 which shows significant contribution of emerging adults' academic performance. Female in emerging adults is 67% and mean age of emerging adults is 20.7. There were 61% of the total emerging adults living in urban areas. The average family size of emerging adults is

4.30 i.e. 4 to 5 siblings which is considered medium family size in Pakistan. The average income of parents is about 40000Rs per month and fathers of emerging adults are more educated than mothers.

Table 1: Descriptive analysis

description	n	min	max	mean	St. deviation
GPA	264	2.3	4.0	3.368	0.478
Gender	264	0	1	0.67	0.469
Age	264	18	25	20.7	1.646
Loc	264	0	1	0.61	0.487
F.S	264	1	9	4.30	1.756
P.income	264	1	4	2.56	1.113
F.Edu	264	1	8	5.15	1.80
M.Edu	264	1	8	4.53	2.087

Note: GPA= Grade Point Average, Loc = location, F.S. = family size, P. income= Parents income, F.Edu= Father's education, M.Edu= Mother's Education.

Measurement model analysis

The measurement model of formative constructs and indicators involve two steps. The first step is to test the collinearity problem among indicators. The second step is to test the statistical significance of the outer weights with the help of boot strapping approach of SmartPLS (Hair et al., 2014). Table 2 describes the significance of outer weights and VIF values of DF construct and its formative indicators.

Table 2: VIF and Significance of construct

construct	Indicators	outer weights	t-values	p-values	VIF
DF	Gender	0.176	3.22***	0.000	1.245
	Age	0.318	6.953***	0.000	1.206
	F.S	-0.155	2.583***	0.010	1.237
	P.income	0.221	3.814***	0.000	1.51
	Loc	0.273	5.462***	0.000	1.159
	M.Edu	0.227	2.957***	0.003	2.453
	F.Edu	0.194	2.371**	0.018	2.457

significance at 5% (1.965), *significance at 1% (2.575)

Structural model analysis

This involves examining the model's predictive capabilities and the relationships between the constructs. The important criteria for measuring the structural model in PLS-SEM are the significance of path coefficients, the level of R^2 , the f effect size and predictive relevance Q^2 (Hair et al. 2014). The path coefficients, R^2 values can be seen from the structural model of DF and AA. In this analysis, the model has tested the impact of DF on AA. So the impact of gender, age, parent income, mother's education, father's education, location and family size

on academic achievement were tested. Seven exogenous latent constructs Gender, Age, Loc, F.S, P. income, F.Edu and M. Edu have been developed. The structural model is shown in-Figure 1 with the impact of demographic factors (DF) on academic achievement (AA).

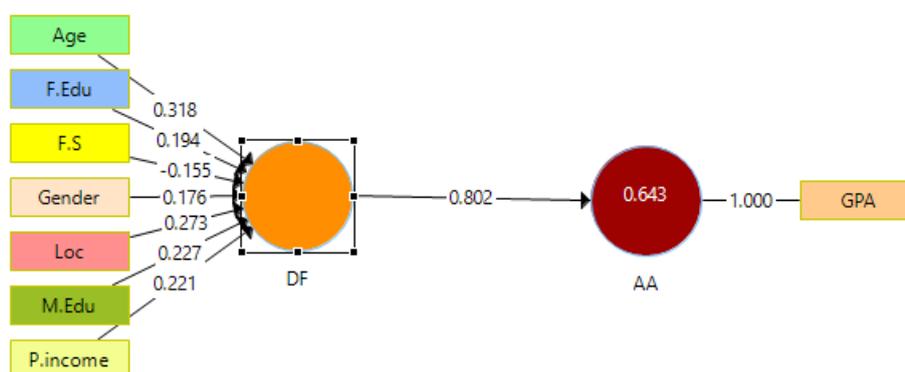


Figure 1: Structural model between DF and AA

In the above figure, The R^2 value is 0.643 which is above the large effect size value and this shows the promising explanatory power of this model. This means that 64.3% variation in students' academic achievement can be explained by demographic factors. Adjusted R^2 0.642 which is equal to R^2 demonstrates that all indicators of DF are relevant and suitable for demographic representation. The predictive relevance of this model Q^2 is 0.619 which is very strong compared to the acceptable value of above than zero. The value of f^2 is 1.80 represents large effect size value. Six demographic factors: Age, F. Edu, Gender, Loc, M. Edu, and P. income had significant positive impact on academic achievement. Only family size (F.S) had a negative impact on emerging adults. According to this model the age is the main contribution towards academic achievement (path coefficient 0.318, t-value= 6.953, $p < 0.000$). Female students perform better in academic than male students. Gender is significant at $\alpha = 0.01$ level (path coefficient 0.176, t-value= 3.22, $p < 0.001$). F-SIZ is negatively significant at $\alpha = 0.01$ level (path coefficient -0.155, t value= 2.583, $p < 0.008$). This means that large family size adversely affect the academic performance of emerging adults. The Loc, is significant at $\alpha = 0.01$ level (path coefficient 0.273), t-value= 5.462, $p < 0.000$ which means urban students perform better than rural students. P. income is significant at $\alpha = 0.01$ level (path coefficient 0.221, t-value= 3.814, $p < 0.000$). F. Edu is significant at $\alpha = 0.05$ level (path coefficient 0.194, t-value= 2.371, $p < 0.016$) and M.Edu is significant at $\alpha = 0.01$ level (path coefficient 0.227, t-value= 2.957, $p < 0.002$) which shows that educated mother's contribution to enhance academic achievement of emerging adults is greater than that of father.

5. Discussion

This study was carried out to ascertain the effect of exogenous variable (demographic factors) on endogenous variable (academic achievement) of emerging adults by using the second

generation technique PLS. The results of this study revealed that DF has a significant effect on the academic achievement with age as the major contributor and family size as the least negative contributor toward academic achievement. The results of this study support the findings and conclusion of various studies on this relationship.

Likewise, in this study, the effect of age on academic achievement was found to be significant, age enhanced academic achievement. The GPA of older students is significantly higher than that of younger students. Ogundokun and Adeyemo (2010) also support this finding where age is an index of maturity and maturity increases academic success. This finding is supported by other studies (Keith, et. al., 2006; Naderi, Abdullah, Aizan, Sharir, & Kumar, 2009; Nasir, 2012; Sturman, 2003).

Similarly, the effect of gender on academic achievement has been examined by various studies. Some studies revealed that female emerging adults perform better than male (Caro et al., 2009; Cole & Espinoza, 2008; Garkaz et al., 2011; Binti Hasan, Bin Adam, Binti Mustapha, & Binti Midi, 2010; Salem, Al-Mously, Nabil, Al-Zalabani, Al-Dhawi, & Al-Hamdan 2013). The difference in the academic performance of male and female students may be attributed to their motivation for academic success (Rusillo & Arias, 2004).

The effect of parent's education is also vital for students' academic achievement. This study found a significant and positive association between mother's education, father's education and student's academic achievement (Acharya & Joshi, 2009; Davis-Kean, 2005). However, the effect of mother's education is greater than that of father's education. This result is consistent with earlier findings by Crede, Wirthwein, McElvany, & Steinmayr (2015), Hijazi and Naqvi (2006), and Nasir (2012). During the emerging adulthood phase of life, students experience numerous individual and social-environmental variations that can affect their academic performance. Therefore, educated mothers will be able to solve their children's problems in a better way, provide better supportive home environment and also help them to achieve academic goals which certainly has a positive effect on a student's academic achievement.

The results of this study further shows that parent's income is positively associated with students' academic achievement. Parents who have a high income, their children perform better in their studies. This finding is in line with studies by Eamon (2005), Ghazi, Nawaz, Shahzad, Shahzada, & Rukhsar, (2013), and Yousefi et al. (2010) who found that parent's income is a stronger predictor of student's academic success. Students who generally come from low socio-economic status tend to show low academic performance and obtained low scores as compared to students who come from high socio-economic status.

Similarly, results show that academic achievements of urban students are better than students from rural areas. Nasir (2012) and Yousefi et al. (2010) support this result that urban students perform better than rural because students who live in urban areas generally have better academic facilities than students living in rural areas.

The seventh and last variable in this study is family size relationship with emerging adult's academic achievement. It was negative and was supported by Rosenzweig and Wolpin (1980), Hanushek (1992) and Iacovou (2001) studies who found that children performance and achievements were reduced due to large family size.

6. Conclusion

It can be concluded from this study that some demographic factors have significant positive effect on academic achievement of emerging adult students. It suggests that universities can arrange some counselling programs for emerging adults about age and gender differences.

On the basis of this study, it is suggested that there are factors that are responsible for high or low academic achievement. As in this research, age is the main significant predictor of AA, therefore, there is a prerequisite for curriculum designers and teachers to take into consideration the age of learners when designing curriculum and planning instructions. The universities and education departments should offer maximum scholarships and better educational resources to those students who come from poor families so that their financial problems do not become a problem in their quest for educational achievement. The size of the family should preferably be small so that parents may be able to provide good education, better living conditions and provide full attention to their children's education. Girls should be educated as educated girls will become educated mothers in the future and contribute towards better education of their children as documented in this study.

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