

Impact of Demographic Factors on the Demand for Management Education in Indore: An Econometric Approach

Dr. Uttam Jagtap*
Dr. R C Sharma**
Vivek Sharma***

*Associate Professor
Shri Vaishnav, Institute of
Management , Indore

**Professor & Head
Department of Management
Central University of Rajasthan

***Doctoral Scholar
School of Future Studies
& Planning, Devi Ahilya University
Indore.

Abstract

The demand for education depend upon a number of attributes of an Individual like Age, Gender, Religion, Caste & Marital Status which are broadly classified in two main categories namely demand side and supply side factors. The effect of all these determinants on demand for education differs significantly depending on the pattern and context of the study. Hence, it is important to predict, control and analyze the structure and determinants of demand for education. The proposed study focuses on impact of Individual Characteristics such as Age, Gender, Religion, Caste and Marital Status on the demand for management education across various management institutions in Indore with the help of the primary data & Logistic Regression. The data has been collected from a student survey of MBA 1st year students of 2012-14 batch from institutes affiliated to DAVV(Devi Ahilya Vishwavidyalaya) or Devi Ahilya University and IIM-Indore (Indian Institute of Management-Indore).

Keywords:

Demand for Education, Management Education, Indore, IIM-Indore and Institutes affiliated to DAVV.

Introduction

The education is demanded by any human being is due to two main reasons. First, education as creation of minimal capabilities, i.e., education is demanded to fulfill the necessary functioning for conducting a normal social life. This motive behind the demand for education is compulsory to live in a society or to maintain a social life. However, there are many individuals who choose to attend school beyond the minimum requirement and this entails for the second reasons, i.e., education as investment in human capital. However, the decision of investing in education or enrolling the candidate (technically known as demand for education) for management courses is a matter of broader concern today specially in management education, i.e., professional degree course like MBA/PGDM.

Management Education simply means courses like MBA/BBA/PGDM/& PGP of IIM-I.

But in this study the total focus is on higher education i.e. post graduate courses like MBA/PGDM/& PGP(IIMI).

- In Indore the demand for management education has been increasing from last few years. The number of seats for MBA courses of DAVV affiliated Institutes or colleges & PGP seats of IIM-Indore are shown below:

Institute	No. of Seats(2011)	No. of Seats(2012)
IIM-Indore	450*	450*
DAVV affiliated Institutes	6600**	7080**

* Source: IIM-Indore Admission Office,

**Source: MP-MET examination brochure of year 2011 & 2012.

- In the year 2009, numbers of seats in IIM-Indore were only 240. But from the year 2010, it has been increased to 450.

Review of Literature

- The studies like (Ghali and et al 1977, Mian 1985, Menon 1998, Duraisamy P. 2001, Chakraborty 2006, Chakrabarti and Joglekar 2006, Duraisamy M. 1998) shows the effects of various child characteristics namely intellectual ability of the students, age, sex, caste, specialization of the study on demand for education.
- (Zega CEPAR, Stefan BOJNEC-2010): In this research they derive some conclusions about higher education demand determinants in Slovenia in general and in the field of tourism and propose some recommendations for national education policy. They found that Demographic trends in general slowdown or even decrease demand for higher education, while socio-economic factors mostly encourage demand for higher education in the field of tourism.
- (Simpson Ruth, Struges Jane, Woods Adrian, Altman Yochanan- Apr 2005): This study represents the findings of a Canadian-based survey of career benefits from the MBA. Results indicate first that gender and age to influence perceptions of career outcomes and second that both men and women gain intrinsic benefits from the MBA.
- (Thompson Edmund R, Gui Qin-Mar/Apr 2000): This study found out the reasons why executives decide to pursue an MBA and high-lights significant differences in motivations by gender, age, educational background, and working experience that have important implications for MBA course. The findings shows that motivations for pursuing MBAs differ significantly by gender, age, work experience, and educational background.
- (Toutkoushian Robert K, Hollis Paula- Aug 1998): This study have not found much evidence that economic and demographic factors influence state higher education appropriations.

Rationale

This research is probably one of the first attempts which shows the effect of age, gender, religion, caste & marital status on the demand of management education with special reference to Indore city and thereby will try to provide a platform for future predictions and control methods with the help of logistic regression. Till date, there are handfuls of studies available on determinants of demand for education & higher education and in most of the cases, factors which are affecting education are determined but there are no studies which talks about the future demand for any type of

education. Basically this study will provide a clear understanding of how various factors like age, gender, religion, caste & marital status may act as demand determinants for management education.

Objectives of Study

1. To study how individual characteristics such as Gender, Age, Religion, Caste & Marital Status act as influencers in demand determinants for management education.
2. To study the Significant Impact of Gender, Age, Religion, Caste & Marital Status on the demand for management education in Indore.
3. To predict the future of Management Education in Indore and thereby finding out the controlling Factors.

Hypothesis

H0a: There is no significant Impact of Age on the Demand for Management Education in Indore.

H1a: There is significant Impact of Age on the Demand for Management Education in Indore.

H0b: There is no significant Impact of Gender, Religion, Category and Marital Status on the Demand for Management Education in Indore.

H1b: There is significant Impact of Gender, Religion, Category and Marital Status on the Demand for Management Education in Indore.

Research Methodology

1 Sampling Design

Universe: In this study the Universe is finite, and it is the total number of students of all MBA colleges in Indore city.

Sampling Unit: In this study sampling unit is the total number of MBA 1st year students of academic year 2012-2013 of Indore city.

Sampling Frame (Source List): In this study, sampling frame consist of IIM-Indore and all MBA colleges which are affiliated to Devi Ahilya University, Indore.

Sampling Technique: In this study **Probability Sampling or Simple Random Sampling** is used so that every item of universe has an equal chance of inclusion in the sample. Random Sample from a finite population refers to that method of sample selection which gives each possible combination an equal probability of being picked up and each item in the entire population to have an equal chance of being included in the sample.

Sample Size: For a finite population, following formula has been used to calculate size of the sample when estimating a percentage or proportion:

$$n = (z^2 \cdot p \cdot q \cdot N) / [e^2(N-1) + z^2 \cdot p \cdot q]$$

where,

n= Size of the sample,

Z= The value of the standard variate at a given confidence level and to be worked out from table showing area under normal curve,

p= Sample proportion,
 q= 1-p,
 N= Population size,
 e= Margin of error.

In this study, level of confidence is 95%, margin of error is 5%, and population size is total number of students in Indore which is calculated by

Institute	No. of Seats(2012)
IIM-Indore	450
DAVV affiliated Institutes	7080
Total no. of seats	7530

Since, confidence level is 95%, Hence Z=1.96, N=7530, e=0.05, p=0.5 & q=0.5

Therefore, by using above formula and values, Sample Size 'n' comes out to be 366.

Sample Size **n= 366**

In this study data is collected from 400 students in order to

reduce margin of error at the same confidence level of 95%.

2 Data and Explanatory Variables

2.1 Data

The present paper uses the primary data collected from a student survey from the 400 first year students pursuing MBA in 15 MBA colleges including IIM-Indore and other colleges affiliated to DAVV in Indore for the academic year 2012-13. The survey has collected data on a number aspects as per the requirement of the study and the present paper uses only part of it as per the requirement. Since the focus of the present paper is to analyze the determinants of the choice the institutions among students in Indore, the data presented here is focused to the problem with overlooking some other important collected information. Out of the 400 students, 21 students are studying in IIM-Indore.

2.2 Explanatory Variables

The explanatory variables used in the analysis are classified as individual characteristics (age, gender, religion, category & marital status). Some of the independent variables used for the analysis are quantitative in nature and some are qualitative and used as dummy/interactive dummy (discrete) variables.

The descriptions of the above mentioned variables are as follows:

Variable	Definition
SELINST	Dependent variable that takes value 0 for IIM-Indore and 1 otherwise.
AGE	Continuous variable showing the age of the student in years.
GENDER	Dummy variable that takes the value of 1 if the student is male and 2 otherwise.
RELIGION	Discrete variable that takes the value 1 if the religion is Hindu, 2 if the religion is Muslim, 3 if the religion is Sikh, 4 if the religion is Christian, 5 if the religion is others.
CASTE/CATEGORY	Discrete variable that takes the value 1 if the category is General, 2 if the category is OBC, 3 if the category is SC/ST, 4 if the category is Physically Handicaped.
MARITAL STATUS	Dummy variable that takes value of 1 if single and 2 otherwise.

Source: Authors Computation.

Note: Many of these variables were tested and finally few of them were used in the regression equations as per the suitability.

3 Binary Logit Model where the Dependent Variable is Choice between IIM-Indore and Institutes affiliated to Devi Ahilya University

A Binary Logit model is used to estimate the choice between IIM-Indore and Institutes affiliated to Devi Ahilya University . The model explains the 'marginal effect' i.e. the change in the propensity or probability of studying in IIM-Indore and Institutes affiliated to Devi Ahilya University after a change in one of the explanatory variables. The specification of the model is as follows:

The probability of studying in IIM-Indore is

$$P = 1 / 1 + e^{-(\alpha + \beta_i X_i)}$$

Where P denotes the probability of a student studying in IIM-Indore, Xi is the set of explanatory variables, β_i is the regression coefficients.

The probability of studying in Institutes affiliated to Devi Ahilya University can be written as

$$1 - P = e^{(\alpha + \beta_i X_i)} / 1 + e^{-(\alpha + \beta_i X_i)}$$

Hence,

$$P / 1 - P = e^{(\alpha + \beta_i X_i)}$$

Where, P / 1-P is the odds ratio in favor of studying in Institutes affiliated to Devi Ahilya University i.e. the ratio of the probability that a student will study in Institutes affiliated to Devi Ahilya University to the probability that it will study in IIM-Indore.

Taking the natural log of the odds ratio

$$L = \ln (P / 1 - P) = \alpha + \beta_i X_i$$

Here L is the log of the odds ratio which is linear in parameters

and β_i is the maximum likelihood estimate of the coefficients on X_i .

Empirical Analysis

The present section of the paper analyzes the empirical estimates obtained from the econometric models (logistic regression)

specified in the previous section. The due focus is to examine the impact of important factors like Age, Gender, Religion, Caste & Marital Status on the choice of the management institute in Indore. To start with a correlation matrix is presented to get an overview of the direction of the different explanatory variables with the dependent variables.

Table-1:
Correlations

		SELINST	AGE	GENDER	RELIGION	CATEGORY	MARITAL
SELINST	Pearson Correlation	1	-.341**	.067	-.109*	.022	-.074
	Sig. (2-tailed)		.000	.184	.029	.664	.137
	N	400	400	400	400	400	400
AGE	Pearson Correlation	-.341**	1	-.208**	.052	.059	.013
	Sig. (2-tailed)	.000		.000	.304	.236	.794
	N	400	400	400	400	400	400
GENDER	Pearson Correlation	.067	-.208**	1	-.058	-.147**	-.087
	Sig. (2-tailed)	.184	.000		.250	.003	.082
	N	400	400	400	400	400	400
RELIGION	Pearson Correlation	-.109*	.052	-.058	1	.008	-.033
	Sig. (2-tailed)	.029	.304	.250		.866	.506
	N	400	400	400	400	400	400
CATEGORY	Pearson Correlation	.022	.059	-.147**	.008	1	.055
	Sig. (2-tailed)	.664	.236	.003	.866		.270
	N	400	400	400	400	400	400
MARITAL	Pearson Correlation	-.074	.013	-.087	-.033	.055	1
	Sig. (2-tailed)	.137	.794	.082	.506	.270	
	N	400	400	400	400	400	400

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

As seen in the Table-1, variables like AGE & RELIGION are negatively correlated with SELINST at 1 percent and 5 percent level of significance respectively. Variable MARITAL STATUS is negatively correlated with SELINST variable whereas GENDER & CATEGORY variables are positively correlated with SELINST variable.

Empirical Estimates of Binary Logit Model where Dependent Variable is the Choice of Selection of Management Institute:

In this sub-section an attempt is made to find out the effects of various individual factors like age, gender, caste, religion & marital status on the choice of management institutes in Indore with help of a binary logit model. The logistic coefficients should be interpreted as the change in the logarithmic odds of the dependent variable associated with a one unit change in the independent variable. The 'institutes affiliated to Devi Ahilya University' is considered as the reference category for the model.

Table-2:

Dependent Variable Encoding	
Original Value	Internal Value
IIM-Indore	0
Institute affiliated to DAVV	1

Table-3:

Categorical Variables Codings

	Frequency	Parameter coding				
		(1)	(2)	(3)	(4)	
RELIGION	Hindu	355	.000	.000	.000	.000
	Muslim	25	1.000	.000	.000	.000
	Sikh	6	.000	1.000	.000	.000
	Christian	4	.000	.000	1.000	.000
	Others	10	.000	.000	.000	1.000
CATEGORY	General	236	.000	.000		
	OBC	133	1.000	.000		
	SC/ST	31	.000	1.000		
MARITAL	Single	395	.000			
	Married	5	1.000			
GENDER	Male	250	.000			
	Female	150	1.000			

Table-4:

Variables in the Equation

	B	S.E.	Wald	Df	Sig.(p-value)	Exp(B)
AGE	-.990	.196	25.435	1	.000**	.372*
GENDER(1)	.450	.589	.584	1	.445	1.569*
RELIGION			3.131	4	.536	
RELIGION(1)	17.382	7541.224	.000	1	.998	35381250.779***
RELIGION(2)	-1.116	1.284	.755	1	.385	.328*
RELIGION(3)	-2.036	1.519	1.798	1	.180	.131*
RELIGION(4)	-1.028	1.161	.783	1	.376	.358*
CATEGORY			3.586	2	.166	
CATEGORY(1)	1.212	.718	2.848	1	.092	3.360*
CATEGORY(2)	1.177	1.004	1.374	1	.241	3.244*
MARITAL(1)	-1.699	1.414	1.442	1	.230	.183*
Constant	24.852	4.541	29.949	1	.000	6.211E10

* Values used in this study, **Significant at the level 1%, ***value out of range so not included in this study.

Hypothesis Testing:

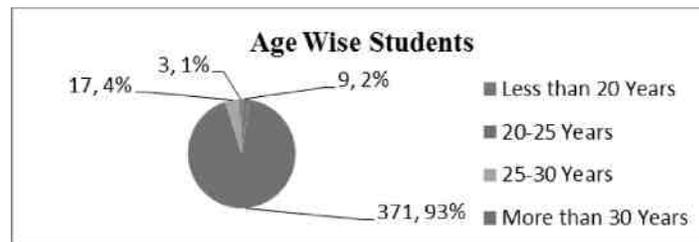
Sig. (p-value) of Table-4 indicates that the Null hypothesis H0a is rejected and Alternative hypothesis H1a is accepted for Age.

Whereas Null hypothesis H0b is accepted and Alternative hypothesis H1b is rejected for Gender, Religion, Category and Marital Status.

Individual characteristics: age, gender, religion, category & marital status (Table-4)

Age = The Exp(B) value indicates that for every unit increase in age is associated with a 62.8 % decrease in the selection of institute affiliated to DAVV, and the coefficient is statistically significant at the level 1%.

Chart-1:

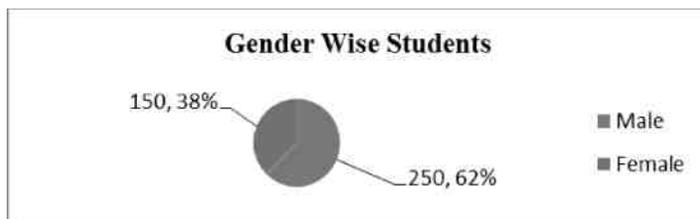


Note: This chart includes the total no. of students in IIM-Indore and institutes affiliated to DAVV.

Gender = The Exp(B) value indicates that female students are more likely to attend institutes affiliated to DAVV vis-à-vis IIM-

Indore after controlling the influence of all other factors but the coefficient is statistically not significant.

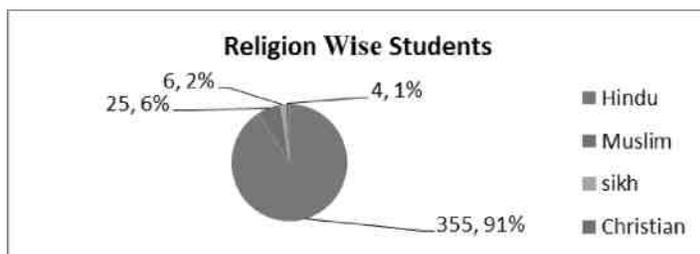
Chart-2:



Note: This chart includes the total no. of students in IIM-Indore and institutes affiliated to DAVV.

Religion = The Exp(B) values for Sikh, Christian, and others shows that they are less likely to attend institutes affiliated to DAVV vis-à-vis IIM-Indore as compared to Hindu, However the coefficients of Muslim, Sikh, Christian and Others are statistically not significant.

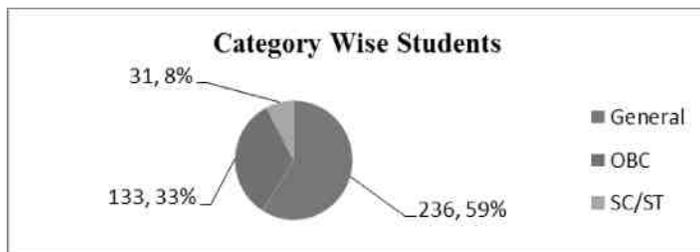
Chart-3:



Note: This chart includes the total no. of students in IIM-Indore and institutes affiliated to DAVV.

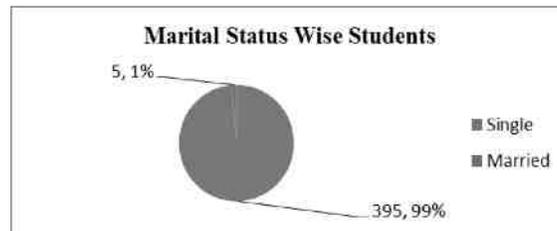
Category/Caste = The Exp(B) value for OBC & SC/ST category indicates that they are more likely to attend institutes affiliated to DAVV vis-à-vis IIM-Indore as compared to General category, however the coefficients are statistically not significant.

Chart-4:



Note: This chart includes the total no. of students in IIM-Indore and institutes affiliated to DAVV.

Marital Status = The Exp(B) value for Married students indicate that they are less likely to attend institutes affiliated to DAVV vis-à-vis IIM-Indore, however the coefficient is statistically not significant.

Chart-5:

Note: This chart includes the total no. of students in IIM-Indore and institutes affiliated to DAVV.

Summary & Conclusion

The present paper has made an attempt to identify the demand side determinants such as age, gender, religion, category, and marital status of students' selection of management institutes between institutes affiliated to DAVV and IIM-Indore in Indore city and to quantify the relative strength and intensity of these influences. The empirical results obtained from logistic regression used for the study reveals several dimensions of the demand for management education in Indore.

1. It has been observed that among the individual characteristics only age factor is statistically significant in the selection of MBA institute whereas no other variable is statistically significant. And as we can see from Chart-1 that 93% of students belong to the age group of 20-25 years, hence it can be concluded that students want to do their MBA degree as early as possible after completing their graduation degree course.
2. Chart-2 indicates even though Females are only 38% of the population but they found to attend MBA institutes more likely than Males, which shows that in future the female ratio will going to increase.
3. Chart-3 indicates that Hindu's population is 91% whereas Muslim, Sikh, Christian and others are at 6%, 2%, and 1% respectively of overall population, and also as per this study, Hindus are more likely to go for Management Education.
4. Chart-4 indicates those OBC & SC/ST categories are at 33% & 8% of overall population as compare to 59% of General category, but they found to attend MBA institutes more likely than General Category, which shows that in future more number of OBC & SC/ST category students would opt for Management education.
5. Chart-5 clearly indicates that only 1% is married students and also as per study they are less likely to attend MBA institutes, so in future the number of married students is going to decrease and nearly every student wants to do their MBA degree before they get married.

A study of this kind can be used as an important planning tool for the concerned policy makers in the analysis of the patterns and determinants of various socioeconomic factors on the choice of various institutions in Management Education.

References

- Chakrabarti, Anindita. 2009. "Determinants of Participation in Higher Education and Choice of Disciplines: Evidence from Urban and Rural Indian Youth," *South Asia Economic Journal*, 10 (2), 371-402.
- Chakraborty, S. 2006. "Demand Side Factors of Children's School Participation-An Exploration with Household Survey Data for Rural North Bengal." *Journal of Educational Planning and Administration*, 20 (2): 189-204.
- Duraisamy, Malathy. 1998. "Children's Schooling in Rural Tamil Nadu: Gender Disparity and the Role of Access, Parental and Household actors." *Journal of Educational Planning and Administration*, 12 (2): 131-154.
- Duraisamy, P. 2001. "Effectiveness of Incentives on School Enrolment and Attainment." *Journal of Educational Planning and Administration*, 15(2): 155-177.
- Ghali, M., and et al. 1977. "The Demand for Higher Education Facing an Individual Institution." *Higher Education*, 6 (4): 477-487.
- Menon, M.E. 1998. "Factors Influencing the demand for higher education: The case of Cyprus." *Higher Education*, 35(3): 251-266.
- Mian, A.B. 1985. "Demand for Higher Education: A comparative Study of Ratio and Logit Models." *Man Power Journal*, 21(3): 19-29.
- Zega CEPAR and Stefan BOJNEC, 2010. "Demand for Higher Education in General and in the field of Tourism in Slovenia." *Organizacija. Journal of Management, Informatics and Human Resources*, ISSN 1318-5454
- Toutkoushian Robert K and Hollis Paula, Aug 1998 "Using panel data to examine legislative demand for higher education." *Education Economics* 6. 2 (Aug 1998): 141-157.
- Simpson Ruth, Struges Jane, Woods Adrian, Altman Yochanan, Apr 2005 "Gender, Age, And The MBA: An Analysis of Extrinsic and Intrinsic Career Benefits." *Journal of Management Education* 29. 2 (Apr 2005): 218-247.
- Thompson Edmund R, Gui Qin. Mar/Apr 2000. "Hong Kong executive business students' motivations for pursuing an MBA." *Journal of Education for Business* 75. 4 (Mar/Apr 2000): 236-240.