

Impact of Job Attributes on Individual Career Choice among BUP Students: A Discrete Choice Analysis

Presented By:

Jebunnesa Jeba



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Study Team:

Jebunnesa Jeba

Arafat Hossain Rafi

Tasnim Tabassum

Abdul Mahidud Khan,
Supervisor



Quick Overview

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Background Story

Bangladesh Civil Service (BCS)

- In 35th BCS 2,44,000 applicants
- In 41st BCS 4,75,000 applicants
- Cash outflow of \$3.1billion by recruiting foreign workers

(Transparency International Bangladesh (TIB))

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Brain Drain

- 82% of young people aged 15-29 expressed desire to leave the country. *(World Economic Forum)*
- 24% of the jobs in RMG belong to foreign Workers. *(Ministry of Finance)*
- Over 43% of workers who left country in 2018 were skilled or professionals in their field.
(Refuge and Migratory Movements Research Unit)

Objective and Uniqueness of the study

- Finding out the magnitude of preference for specific job-related attributes.
- Quantifying the Change in Utility and Marginal Willingness to Accept in absence of Job-related facilities.
- Incorporating heterogenous background.

Literature Review

- An interesting finding by Zohara (2017) is that the job satisfaction level of BCS administrative cadres had no significant relationship with their previous academic qualification. The knowledge from their four years of bachelor's degree or master's degree comes to little or no use in their job life.
- Islam and Hasan (2020) found that the employee of public sector is earning 31.2 % more than employees of the private sector, especially after the government revised the PayScale in 2015.
- Mahmud et. al.,(2017) used the Discrete Choice Experiment to elicit willingness to accept for certain job benefits of workers who are already in formal employment residing in Dhaka and Chittagong division. According to them workers' most preferred attribute is job security.
- According to Clark (1998), it is more significantly correlated with income for men and more significantly correlated with working hours for women in OECD countries. Also, job satisfaction is not correlated with hard or difficult work among younger workers.

Discrete Choice Experiment (DCE)

A discrete choice experiment (DCE) is a statistical approach for understanding people's preferences for specific choices.

- Origins in mathematical psychology. Also known as '**Stated preference discrete choice modelling**'.
- Marschak (1960) was the first to introduce them into economics, and McFadden developed them into their current econometric implementation (1973).
- Attribute based hypothetical survey measure of value.
- DCE provides quantitative measures for the relative importance of different job attributes, including the willingness to accept/pay.
- It can be used to assess the impact of changes in job attributes or services because **they control for the influence of demographic factors**.

Discrete Choice Experiment (DCE)

Steps of DCE

Identify the
Attribute
and Level

Experiment
Design

Collecting Data

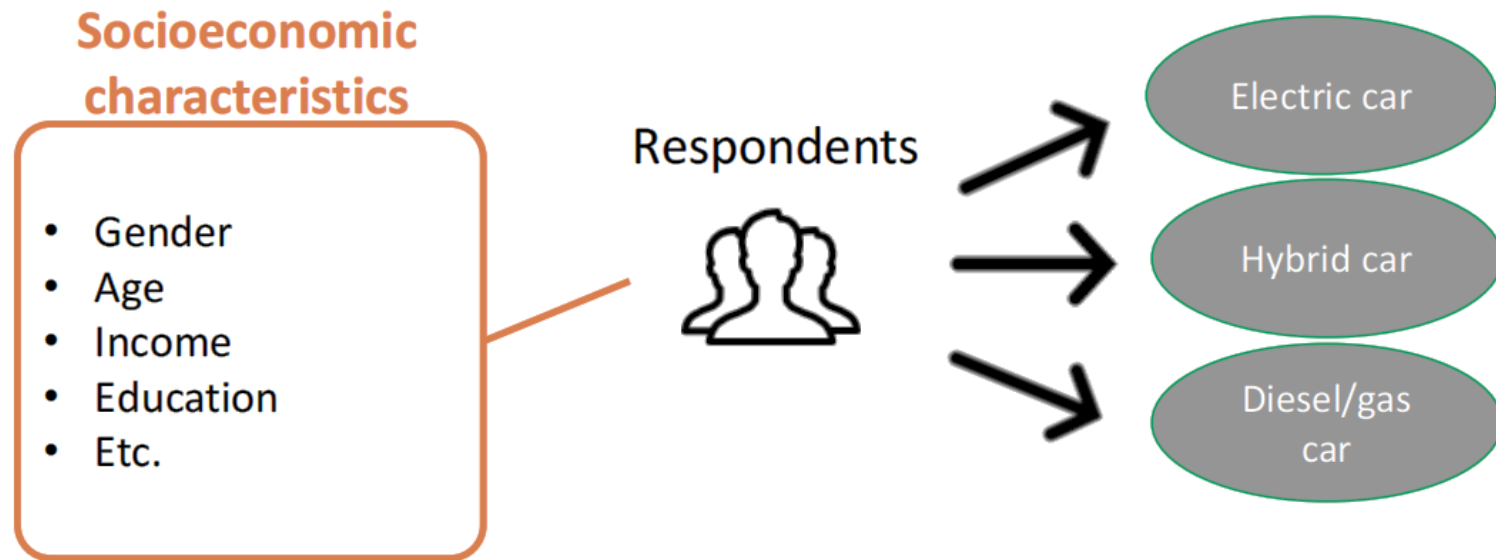
Analysis

Methodology

Identifying the Attributes and Level

Monthly Wage (BDT)	Working Hour (Hour/week)	Job Security*	The opportunity of using previous educational knowledge/skill
15000	30-45	Yes	Yes
30000	45-60	No	No
45000	60-75		
60000			

Why use DCE?



Experiment Design

	Job A	Job B
Salary (monthly)	60000	30000
Working Hour (weekly)	46-60	30-45
Job Security	No	Yes
Opportunity of Using Specific Knowledge/ Skill Field	Yes	No
What is your choice in the above question 1 ?		
a) Job A b) Job B c) Neither		

Experiment Design

What is your choice in the above question 1?

a) Job A b) Job B c) Neither

i j

Let, n student choose Job A as alternative i .

According to the Random Utility Model, utility U_i derived from alternative i has two components, V_{in} which is a systematic component of utility and e_{in} which is a random component of utility.

$$U_{in} = V_{in} + e_{in}$$

Experiment Design

According to the Random Utility theory,

$$\begin{aligned} P_{ni} &= \text{Prob} (U_{ni} > U_{nj} \forall j \neq i) \\ &= \text{Prob} (V_{ni} + e_{ni} > V_{nj} + e_{nj} \forall j \neq i) \\ &= \text{Prob} (V_{ni} - V_{nj} > e_{nj} - e_{ni} \forall j \neq i) \end{aligned}$$

Using the density function $f(e_n)$
this cumulative probability can be rewritten as,

$$P_{ni} = \int I(V_{ni} - V_{nj} > e_{nj} - e_{ni} \forall j \neq i) f(e_n) \delta e_n$$

Source: Kennet A. Train (2009)

Experiment Design

Now, We use Conditional Logit Model to know the probability of selecting alternative, i from Choice Set, S

$$P(i) = \frac{\sum \exp(v_{in})}{\sum_{j \in S} \exp(v_{jn})}$$

Now a linear form of V_{in} is assumed,

$$V_{in} = \alpha_i + \sum \beta_{ik} X_{ikn}$$

Source: Hideo Aizaki (2015)

Experiment Design

$$P(Y=1|x) = b_0 + b_1W_1 + b_2W_2 + b_3W_3 + b_4W_4 + b_5H_1 + b_6H_2 + b_{10}S_1 + b_{11}S_2 + b_{12}O_1 + b_{13}O_2 + e$$

Where, Y = Dependent variable which is 1 if alternative *i* is chosen or 0 otherwise

B_k= coefficient for the alternatives where k= 0,1,2,3,.....,n

W1= salary is 15,000

W2= salary is 30,000

W3= salary is 45,000

W4= salary is 60,000

H1= 30-45 working hour per week

H2= 45-60 working hours per week

H3= 60-75 working hours per week

S1= Does offer job security

S2= does not offer job security

e= error term

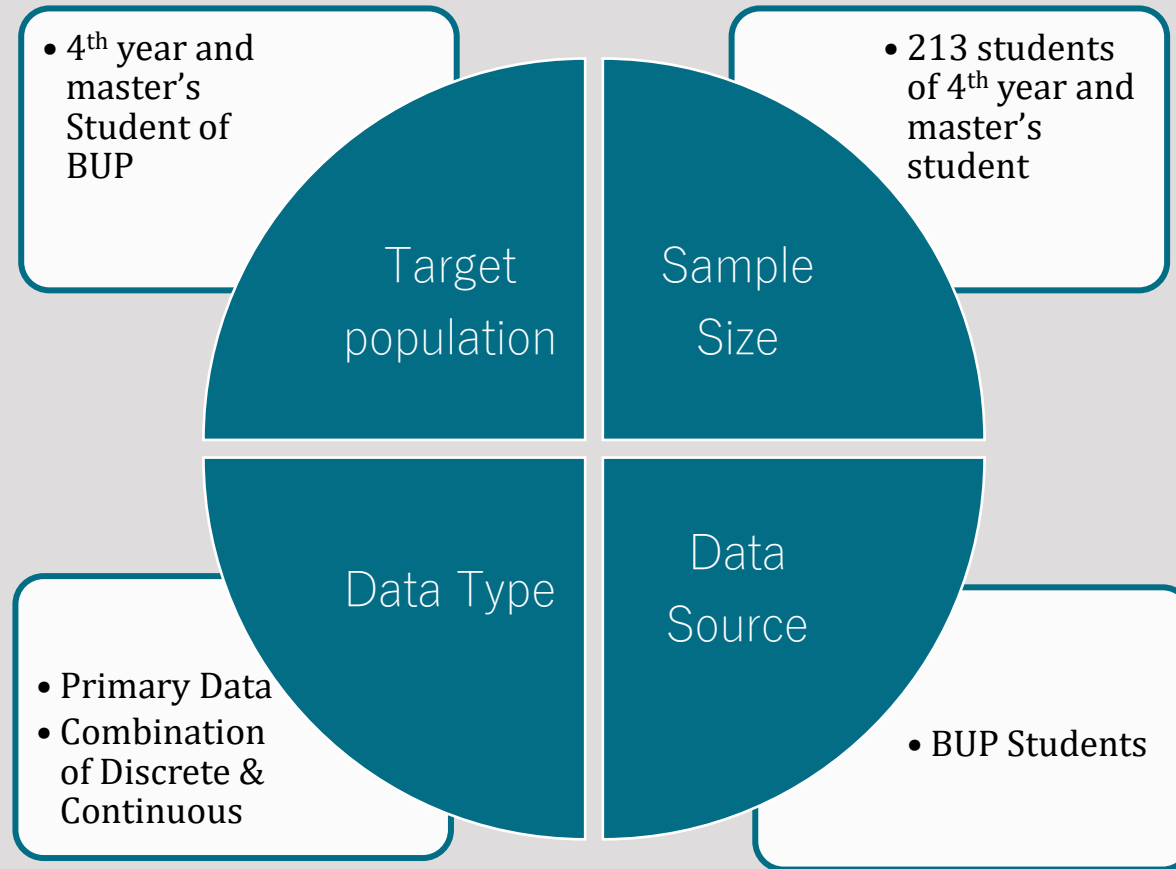
Sample Size calculation

Orme (2010) has proposed a formula that can be used as a rule of thumb in determining the minimum sample size for a DCE.

Therefore, Sample size: n will be more or equal to $500c/ta$

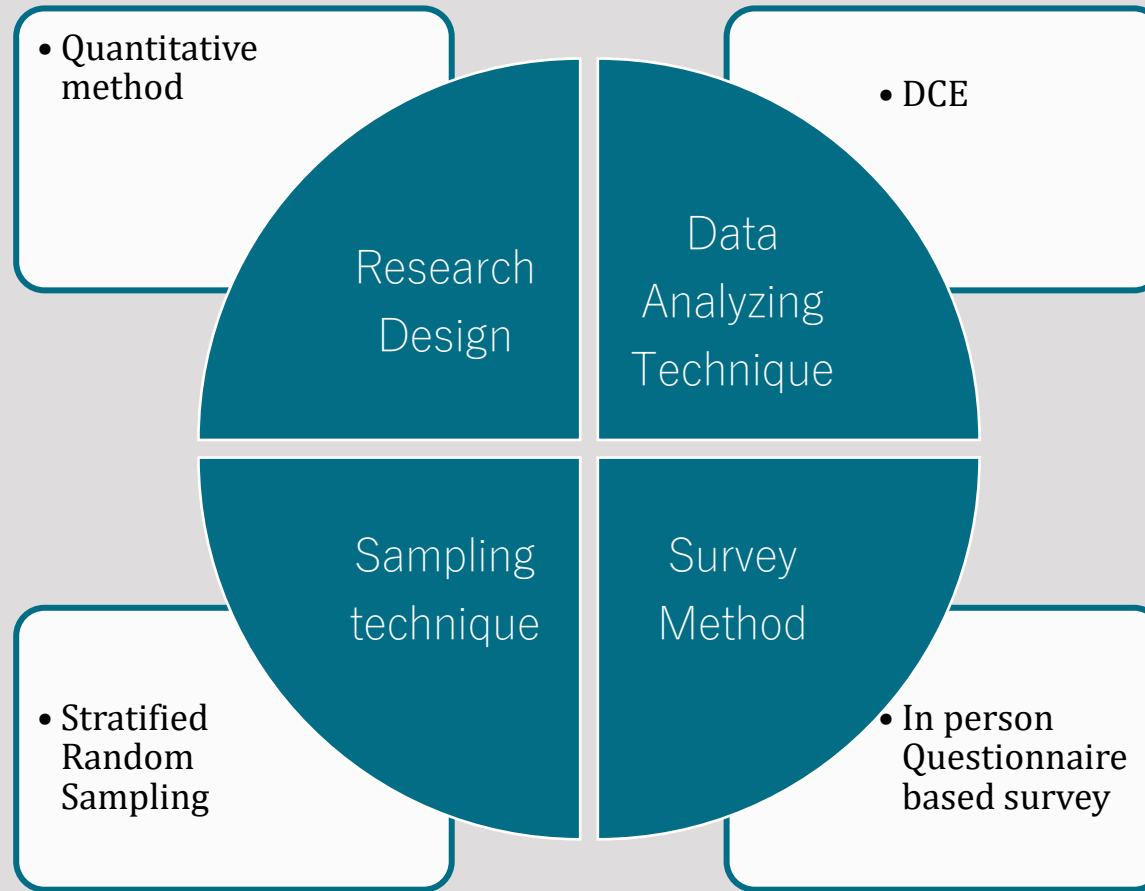
Here, “ n ” = the minimum sample size or the number of respondents,
“ t ” = is the number of tasks or choice set (in this research, there are 8 choices set per respondent),
“ a ” = is the number of alternatives per task (there are three alternatives per task)
“ c ” = the largest number of levels for any one attribute
(the salary attribute had the largest attribute of 4).

Data collection (Survey Method)



Methodology

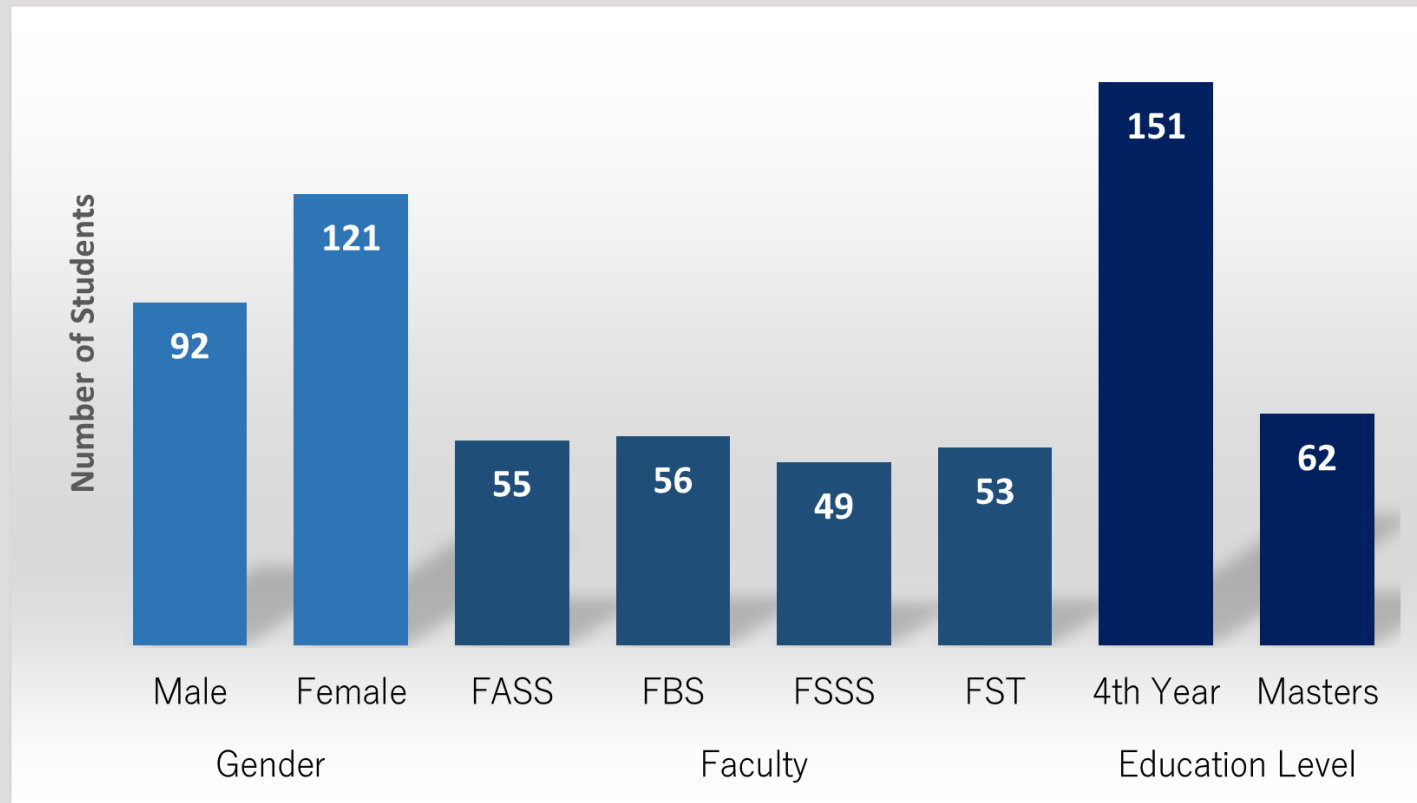
Data collection (Survey Method)



Methodology

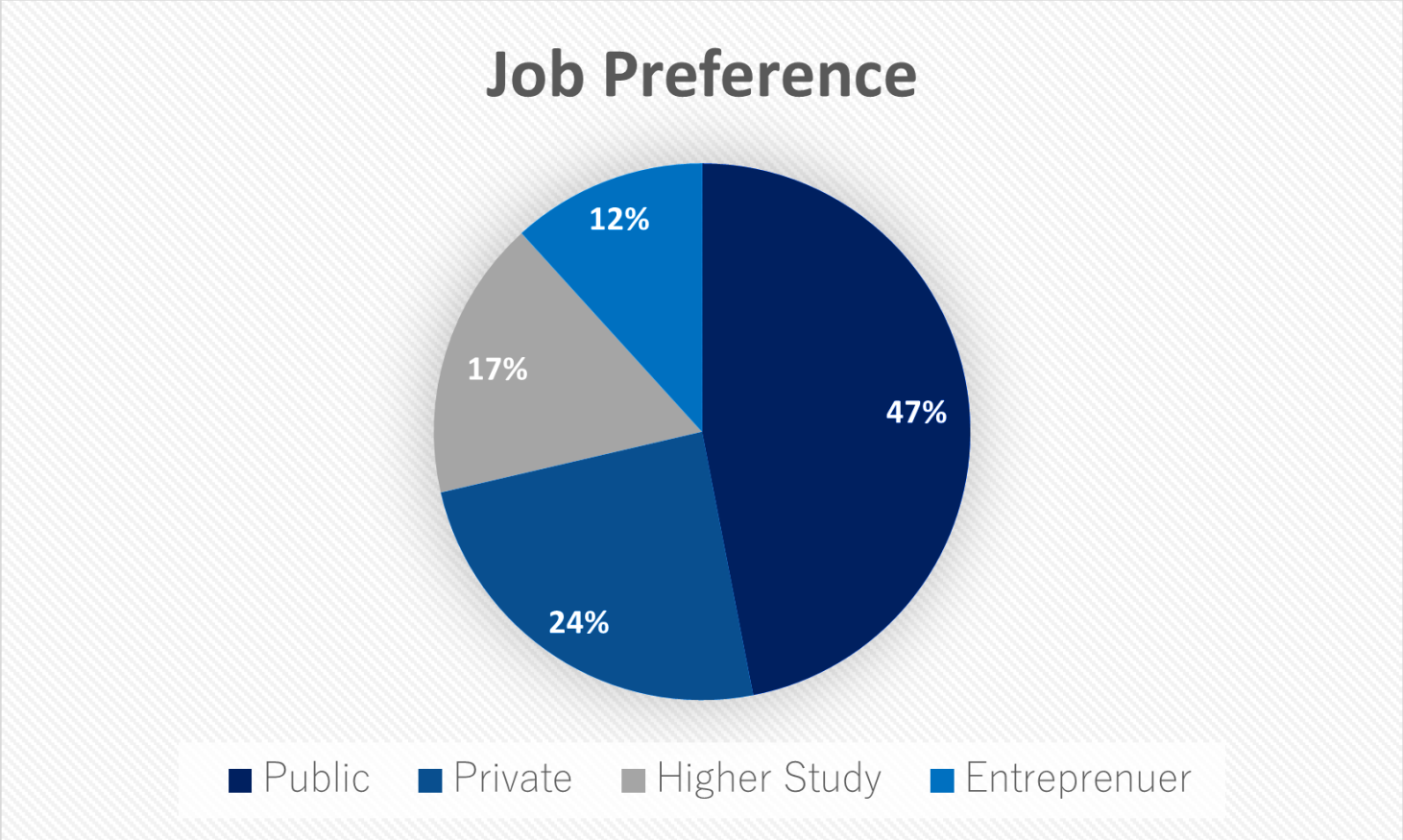
Data Analyzing

Respondents Demographics



Result

Respondents Demographics



Result

Conditional Logit Results

Level of Attributes	All Students	WTA (in thousand)
Alternative Specific Constant	0.548*** (0.147)	
No Job Security	-0.358*** (0.072)	16.21
No Opportunity of Using Specific Field Knowledge/ Skill	0.268*** (0.091)	-12.12
46-60 Hour of Working	-0.390*** (0.098)	17.65
61-75 Hour of Working	-0.252*** (0.083)	11.42
Salary	0.022*** (0.002)	

$$MWTP (job security) = - \frac{\hat{B}_i}{\hat{B}_p}$$

- After using the maximum likelihood method to Estimate the coefficients B_i and B_p for corresponding variable $X_i(\text{job security})$ and X_w (salary attribute), we can calculate the MWTP for job security:

$$MWTP (job security) = - (B_i/B_p)$$

Exploring Heterogeneity in Preferences

	Male Students	Female Students	4th Year Students	Masters Student
Alternative Specific Constant	-0.113	1.051***	0.421**	0.916***
No Job Security	-0.381*** (0.108)	-0.346*** (0.097)	-0.316*** (0.084)	-0.466*** (0.137)
WTA (in thousands)	13.79	18.41	14.84	19.34
No Opportunity of Using Specific Field Knowledge/ Skill	0.328** (0.139)	0.251** (0.120)	0.316*** (0.106)	0.140 (0.175)
WTA (in thousands)	-11.86	-13.32	-14.83	-5.8
46-60 Hour of Working	-0.242* (0.146)	-0.512** (0.120)	-0.377*** (0.116)	-0.425** (0.188)
WTA (in thousands)	8.74	27.2	17.7	17.62
61-75 Hour of Working	-0.090 (0.133)	-0.381*** (0.107)	-0.254*** (0.098)	-0.256 (0.156)
WTA (in thousands)	3.25	20.26	11.92	10.61
Salary	0.028*** (0.003)	0.019*** (0.003)	0.021*** (0.002)	0.024*** (0.004)

Result

Exploring Heterogeneity in Preferences

	FASS	FBS	FSSS	FST
Alternative Specific Constant	0.773***	1.131***	0.175	0.246
No Job Security	-0.392*** (0.141)	-0.025 (0.143)	-0.567*** (0.152)	-0.567*** (0.150)
WTA (in thousands)	35.11	1.05	21.49	17.87
No Opportunity of Using Specific Field Knowledge/ Skill	0.241 (0.168)	0.677*** (0.182)	0.064 (0.193)	0.096 (0.195)
WTA (in thousands)	-21.54	-28.26	-2.43	-3.03
46-60 Hour of Working	-0.590*** (0.196)	-0.552*** (0.205)	-0.009 (0.204)	-0.393** (0.197)
WTA (in thousands)	52.83	23.06	0.36	12.39
61-75 Hour of Working	-0.274* (0.156)	-0.275* (0.157)	-0.154 (0.182)	-0.350* (0.183)
WTA (in thousands)	24.56	11.47	5.82	11.02
Salary	0.011*** (0.004)	0.024*** (0.004)	0.026*** (0.004)	0.032*** (0.004)

Result

Exploring Heterogeneity in Preferences

	Public	Private	Higher Study	Entrepreneur
Alternative Specific Constant	0.332	0.650**	1.044***	0.521
No Job Security	-0.347*** (0.104)	-0.370** (0.150)	-0.279 (0.170)	-0.518** (0.216)
WTA (in thousands)	16.09	13.1	20.53	20.83
No Opportunity of Using Specific Field Knowledge/ Skill	0.406*** (0.130)	0.205 (0.195)	-0.002 (0.208)	0.262 (0.276)
WTA (in thousands)	-18.87	-7.24	0.1632	-10.56
46-60 Hour of Working	-0.359** (0.144)	-0.457** (0.202)	-0.313 (0.238)	-0.489* (0.291)
WTA (in thousands)	16.65	16.15	23.02	19.67
61-75 Hour of Working	-0.165 (0.121)	-0.398** (0.176)	-0.259 (0.192)	-0.269 (0.253)
WTA (in thousands)	7.65	14.09	19.09	10.83
Salary	0.022*** (0.003)	0.028*** (0.004)	0.014*** (0.005)	0.025*** (0.006)

Result

Descriptive Analysis

	Public	Private	Higher Study	Entrepreneur
Paid leave more than 15 days with less salary	50%	30%	48%	32%
Paid leave less than 15 days with more salary	50%	70%	52%	68%
Socially highly prestigious job	59.60%	46%	72%	48%

Result

Conclusion

- In this study we have used the Discrete Choice Method(DCM)to elicit the amount respondents are willing to accept if they are deprived of certain job attributes such as working hours, job security, and the opportunity of using previous knowledge/skills in the workplace.
- The study has found that students prefer the public sector more than the private sector. They also prefer to have job security and shorter working hours. This finding suggests that working extra hours reduces their utility.
- Female students need more Compensation if they are to sacrifice job security and work longer hours.

Conclusion

- A large portion of the students has selected that they don't want to use their previous knowledge in a job. This finding can mean that majority of the students are not happy with their major subject in honor's/masters or working in other generalized fields gives them more utility rather than the specialized field. This can be why most students prefer public jobs as they require more generalized knowledge than specialized sectors.
- Employers of various sectors will also benefit from this study as it will give them an idea about the job attribute preference of new graduates. However, many other influential job attributes need to be taken into account, but due to our time constraints, we could not do so.



Thank you!