Adaptive Choice-Based Conjoint Analysis of Marketing Master Student's Job Preferences

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Abstract

This study focusing on the preferences of Hungarian Marketing MSc students on the job market while using CBCA conjoint analysis. An alternative preference technique is used at the first phase as the attributes are ordinal.

Our results show that three different categories of attributes might be differentiated along their importance. Most important category is the net income. The second 'middle' category consists of 'distance from home', 'payment method' and 'employer type'. The third least important category consists of 'home office', 'working hours', 'extra programs' and 'training'.

'Payment method' receives the most significant influences. 'Gender', 'region of origin', 'academic influence' and 'type of permanent residence' has an impact on its importance. This attribute is the only not fixed feature in the middle important attribute set.

Keywords: preference, conjoint, job choice

1. Theoretical Framework

According to this paper's chosen theoretical framework, three types of approaches might be used for employers to attract applicants. The first approach concentrates on the recruitment process (timing, messages, places). The second is for inducements both in the financial and in the nonfinancial meaning. The third approach is focuses on the applicant pools (non-traditional applicants and less qualified applicant) (Rynes SL, 1990).

In our paper, we focus on the second approach and try to scale the importance of different financial and nonfinancial job preference attributes in the case of Marketing master students. Our study demonstrates job offers as a product that might be sold for students on the job market. Job attributes might be considered as product features, that are offered for the applicants (the clients) as they sign for a job (buy the product). The price charged for the job contract is the commitment for the employer and the skills used for fulfilling the requirements. This concept makes this topic accurate to use marketing phenomenon and methods such as the joint attribute evaluation tool the conjoint analysis (Yasmin, Mahmud, & Afrin, 2016).

2. Attributes for Conjoint Analysis in Literature

Conjoint analysis is used to explore the trade-offs between the different job characteristics. In the last decades of research the attractiveness and importance of career features were examined in different target groups (eg: agricultural students (Meyerding, 2018), MBA students (Montgomery, 2011)). In our literature review several studies were identified using conjoint analysis on job preference attributes. Although most of the papers were focusing on students at higher education none of them were focusing on Marketing students or fresh Marketing graduates. This study aims to measure the importance of different job preference attributes in the field of marketing. In this chapter those articles are reviewed which investigates with the conjoint method into the young generation in/or business fields.

Retail career attractiveness was examined among college students by the attributes of the industry type, starting salary, five-years-salary, training, benefits and work-life balance. According to the results five-years-salary is over preferences above all other attributes. (Oh, Weitz, & Lim, 2016). Generation Y job preferences for French students were discussed along several binary characteristics such as type of contract, atmosphere, distance, career path, salary, type of work, hours, reputation, status and bonuses. It seems that type of contract and atmosphere at work highly more important for the Y generation than the other characteristics (Guillot-Soulez & Soulez, 2014). MBA graduates job searches were evaluated along with 14 attributes: intellectual challenge, geographic area, financial package, ethical reputation, caring about employees, people in the organization, learning on the job, type of position, advancement, dynamics & culture, business travel, environmental sustainability, community/stakeholder relations, economic sustainability. For this group the intellectual challenge is evaluated the highest importance, while economic sustainability was scored the least important (Montgomery, 2011). Start-ups are in the focus of workplace attractiveness. Recent conjoint study discovered nine attributes of attractiveness in the start-up sector along paired choice alternatives, such as flexibility of working schedule, hierarchy, team climate, company shares, responsibility / empowerment, task variety, leadership functions, learning curve, entrepreneurial knowledge building. The most important characteristic seems to be the team climate, but it must be noted that financial attributes were not covered in this study (Tumasjan, Strobel, & Welpe, 2011).

3. Conjoint – the Applied Method

The conjoint method dates back to 1970th. This methodology for modelling multiple-preference of customers originates in mathematical psychology and psychometrics. The aim of the conjoint is to forcast the customers' choice on different product profiles along several product attributes while estimating the importance of the attributes and the utility of their levels. Two main approaches have emerged in conjoint modelling. The first approach uses 'two-factor-at-a-time' in data collection while the second approach uses 'full-profiles' for evaluations. The 'full-profile' approach provides more realistic situations for the respondents as they need to judge certain profiles along with several attributes. As the stimuli are closer to real situations the results of the modelling are expected to be closer to reality (Green & Srinivasan, 1978).

Choice-Based Conjoint Analysis (CBCA) is the second generation of the conjoint analysis methods since the traditional conjoint analysis (TCA) was criticized for not judging the real customer choices just concentrating on the chosen preferences (Backhaus, Wilken, & Hillig, 2007). The CBCA is actually not a unique technique but more like an umbrella for several hybrid methods those are most widely used in market research cases (Agarwal, DeSarbo, Malhotra, & Rao, 2015).

The chosen method of this study is Adaptive Choice-Based Conjoint (ACBC) which is an alternative against a few problems experienced in CBCA. Namely, one point is that the profiles are shown for the respondents sometimes far from the ideal or realistic options that might be considered by the unique participant. One other point if the respondent evaluates one attributes very high and only one level is shown among the options than he or she chose easily that only one option without evaluating other profiles. ACBC consists of 3+1 different phases to build the model for preferences. In the so-called 'Build Your Own' (BYO) first phase the individual preference levels for each attribute are configured in a task where the respondent must create an ideal product along the attributes. Based on their choices several profiles are created for further evaluation. In our research this phase is modified thus ordinal scales are used as attributes. The second phase is the 'screening' phase where the respondents need to decide whether they would like to pick each profile or not. The final choice is not forced here, every profile might be accepted or refused. In this phase, the 'none' parameter threshold is estimated. The 'choice tasks section' is the third phase where the surviving profiles (those were chosen in the second phase) are grouped three per screen including attributes those are the same in all three concepts on the screen so the respondents need to focus only on the different features and choose only one concept. The winning concepts compete in a next round until the winner concept is identified. These three phases lead to a good trade-off database for modelling part-worth utilities. The +1 optional phase is called 'calibration section' where the respondent needs to evaluate the concept created in BYO phase and the winner of the previous phase, plus 4 accepted and rejected concepts. These concepts must be evaluated on a 5 points scale how likely he or she would by the given profile. This section is used to estimate the part-worth threshold for 'none' (Sawtooth Software, Inc, 2014).

4. Sample Description and Data Collection

The research was conducted in a Hungarian business school under the framework of the obligatory course of 'Marketing research and market analysis' for Marketing MSc students.

The questionnaire was online distributed among students in their 1st semester. The data were collected during four semesters: in the spring semester of 2017/2018, both semesters of 2018/2019 academic year and the autumn semester of 2019/2020.

They have been offered course 3 points for the filling in as an extra above the total 100 points of course. Thanks to the extra motivational points, 79-86% of the students have participated in the survey every semester. 273 students filled in, 24,9% of the respondents were male and 75,1% female. The average age in the sample was 24,20 years with 2,26 years standard deviation.

5. The Questionnaire Design

Eight attributes were chosen for this study. Seven are originated from the literature review as they have emerged in more studies. 'Distance from home' and its levels were align to the size of Budapest. 'Net income EUR/month' and its five levels were categorized along EU statistics (EUROSTAT, 2011). In case of 'working hours', 'home office' opportunities, 'training' and 'extra programs' we used a 3-level ordinal scale to see utilities more detailed. 'Employer' type levels are from the three typical sector broadened by start-ups as a fast developing employer type also observed in literature ((Tumasjan et al.., 2011). This is the only attribute where the scale in nominal and no ordinal nature is present. The eighth attribute covers the fraudulent contracting and legal / illegal payment methods for employers since this phenomenon is present in the Hungarian labour market (Pedersini, Pallini, & European Foundation for the Improvement of Living and Working Conditions, 2016). See details of attributes and levels in Table 1.

We choose the ACBC approach due to the fact that applying for a job is a complex decision, as it was discovered in the literature review applicants take many aspects into account when making a decision. During an interview when the conjoint approach is applied respondents are forced to make a sequence of (slightly unrealistic) fast decisions and ACBC helps us to eliminate the less relevant levels and alternatives from the choice tasks, in other words, it makes the decision making easier and more realistic for the respondents, which is clearly beneficial when it comes to a complex product category. And last but not least less „noise" during an interviews means a more accurate measure.

The basic logic of the interview flow followed the ACBC approach outlined in the previous chapter. Nevertheless, it is important to note that 7 out of the 8 attributes involved in this survey have an ordinal measurement level, thus, the „classic" BYO part of the ACBC approach was not applicable in our questionnaire. In the case of an ordinal scale, the most appealing level does not depend on the preferences of a unique respondent but obvious. The only exception in our case was the type of employer dimension where a single choice question (in line with the traditional ACBC approach) was used.

In the first phase in order to find a relevant set of starting points for the second step of the ACBC interview even in the cases of the ordinal attributes, we identified the levels being „already acceptable" instead of the obvious ideal ones. We showed the levels of ordinal attributes one after another (starting with the least attractive one) up to the point when our respondent claimed that the actual level of the attribute was acceptable as a part of a job offer on her / his side. Each question concentrates on one attribute and one level, such as: 'Are you willing to accept a job in case 90 minutes of travel is needed in one direction?' (The next to question focuses on 60, 45 and 30 minutes). Maximum 24 questions (number of every level, but only until the accepted level) concentrates on to cover the unique preference level of the students for the attributes.

Being aware of a set of relevant levels the interviews were carried on with the traditional steps of an ACBC methodology

In the second phase, the selection of the consideration set, each job offers should have been evaluated if the respondent would accept the offer or not. The stimuli were presented via verbal (written) presentation (Green & Srinivasan, 1978) where each conjoint card was shown

one digital screen for the respondents. Each screen has introduced 3 different job offers based on the respondents' answers in the first phase. Altogether 10 screens must have been evaluated which means 30 nonredundant job offers. On each screen, four of the attributes were on the same level (based on the individuals' first phase choices), and four were different. It must be noted that the choice is multiple choice so the respondent can take even all three job offers if he or she likes.

In the third phase, the tournament section aiming to identify the rank order of the offers selected into the consideration set, each job offer that was chosen by the respondents was offered again randomly in 2-3 offers / screen, to see their preferences among the chosen packages.

6. The Results

The typical output for conjoint analysis is a table that includes the relative importance in percentages compared to the whole set of attributes for each individual object attributes. Part-worth utilities are also calculated to estimate the preference for each level under one individual attribute (Green & Srinivasan, 1978). The following table demonstrates these results in our study.

Attributes might be scaled along with three categories. The first category consists of only one attribute ‘Net income’, as it is highly more important than the others. The importance of this attribute is more than double than the next attribute ‘Distance from home’. The second category consists of three attributes those are middle important for the respondents such as ‘distance from home’ and ‘payment method’ and ‘employer’. The third category is the least important category built up by ‘home office’ and ‘working hours’ and ‘extra programs’ and ‘training’ attributes. It seems that these characteristics are less matter of choice for Marketing master students.

TABLE 1: Importance and utilities

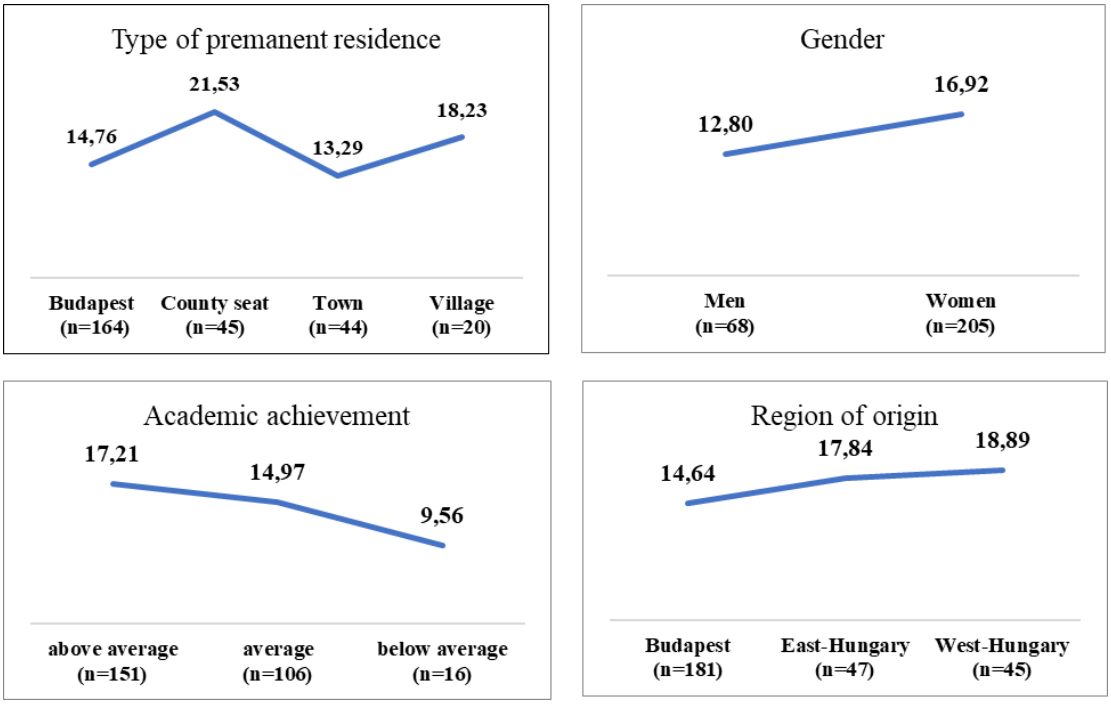
	ATTRIBUTES	IMPORTANCE		LEVELS	UTILITIES	
		Mean %	Std. Dev		Mean	Std. Dev
HIGH	**Net income, EUR/month** (the HUF amount exchanged)	39,46	11,06	516	-185,87	52,95
				581	-49,56	34,03
				645	36,38	24,37
				710	69,26	31,20
				774	129,79	43,89
MIDDLE	**Distance from home (min)**	16,52	5,83	90	-89,28	34,58
				60	6,75	20,41
				45	39,63	14,49
				30	42,90	14,10
	Payment method	15,89	11,26	not contracted, must be self-employed or pocket payment	-58,58	44,06
				partially contracted, partially must be self-employed or pocket payment	-9,97	25,01
				totally legal, contracted	68,55	49,31
	Employer type	12,28	5,24	public institution	-52,35	35,10
				multinational company	4,18	23,02
				Hungarian owned company	21,75	24,22
				start-up	26,41	22,01
LOW	**Home office**	5,79	4,76	not allowed	-21,33	17,34
				on special occasion it is allowed	-3,67	10,02
				anytime allowed	25,00	21,76
	Working hours	4,06	3,83	fixed	-15,74	16,23
				core time with flexible open and close	-1,03	8,17
				completely flexible	16,77	15,48
	Extra programs	3,01	2,84	not available	-8,06	7,59
				available but self-financed	-8,00	7,56
				available for free	16,05	15,14
	Training	2,98	2,35	not available	-13,08	11,35
				occasionally	2,29	5,66
				designed training programs	10,80	8,00

Importance were ANOVA tested for ‘gender’ (male / female) ‘age’ (max 23, 24, above 24) ‘type of permanent residence’ (Budapest / county seat / town / village), ‘academic achievement’ (below average / average / above average) and ‘region of origin’ (West-Hungary / Budapest / East-Hungary). Age has shown no significant difference in case any of the attributes.

Payment method seems to be the most sensitive in case of importance. ‘Type of permanent residence’ (Levene p=0.914, F p=0.001) shows a significant effect. Payment method is the most important for those who arrived from county seats (21.53) and less important for those who originate from towns (13.29). The ‘payment method’ has affected by gender as well (Levene p=0.897, F p=0.009), since is more important for women (16.92) than for men (12.80). ‘Academic achievement’ also influences the importance of ‘payment method’ (Levene p=0.139, F p=0.020). The better results the students have the more they evaluate this attribute, above average mean importance is 17.21, for average students 14.97

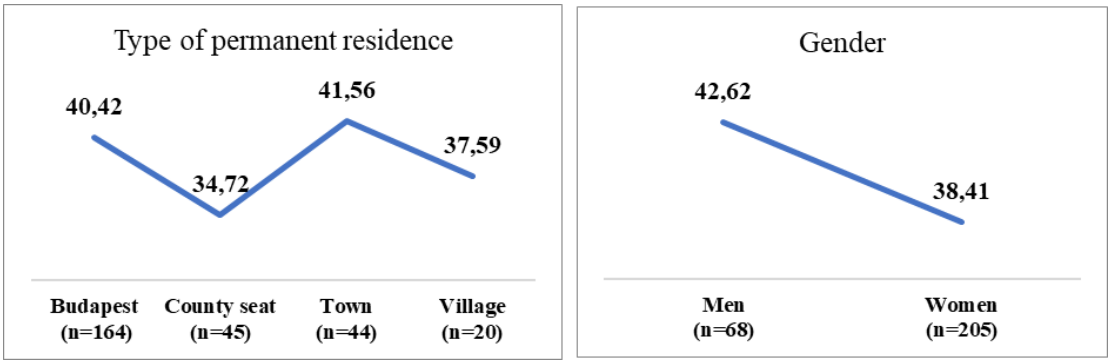
and those who are below average it is 9.56. The last variable that influences this attribute is ‘region of origin’ (Levene p=0.588, F p=0.032). Budapest originated students are the least sensitive for ‘Payment method’ (14.64) while East-Hungary (17.84) and West-Hungary (18.89) originated students are more focusing on this attribute.

FIGURE 1: Significant effect on ‘Payment method’ attribute (mean importance)



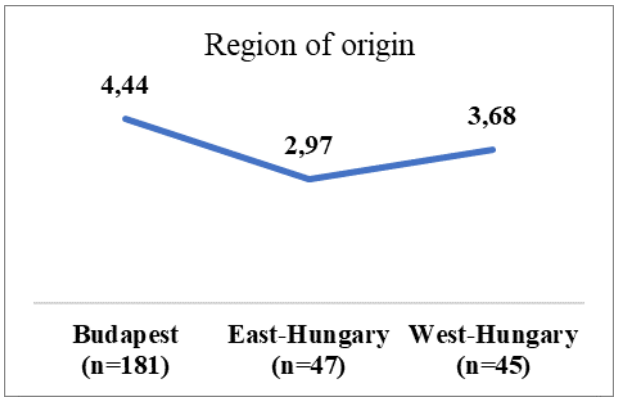
‘Net income’ is influenced by two variables. One is the ‘type of permanent residence’ (Levene p=0.127 , F p=0.008). The most important for those who is permanently seated in towns (41.56) and less important for those who have permanent address in county seats (34.72). Gender has a significant impact on the importance of net income (Levene p=0.110 , F p=0.006). Men prefer net income more (42.62) than women (38.41).

FIGURE 2: Significant effect on ‘Net income’ attribute (mean importance)



‘Working hours’ has only one influential variable, the ‘region of origin’ (Levene p=0.058, F p=0.048). This characteristic is the most relevant for those who was born and raised in Budapest (4.44) and the less important for East-Hungarian originated students (2.97).

FIGURE 3: Significant effect on 'Working hours' attribute (mean importance)



7. Limitations and Conclusion

The importance of job attributes differ for each target groups as it appears in the literature. This paper takes into account one target group in one country and university. The attributes might be segmented into three groups from most important to least important. Wages alone dominates the preference of university students thus it was not evident by literature review. The middle important features are 'distance from home', 'payment method' and 'employer type'. From these three only one characteristics might be developed by employers in a short-term 'payment method' - the other two attributes are rather fix in short-term. The most sensitive attribute seems to be this 'payment method' as 'gender', 'region of origin', 'type of permanent residence' and 'academic achievement' influences it's value for the students. The least important are those features which can be developed by the employer in a shorter-term as they are the most flexible such as 'training', 'working hours', 'home office' and 'extra programs'.

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