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Using Conjoint Analysis to Elicit Employers' Preferences Toward Key Competencies for a Business Manager Position

This paper attempts to identify those competences for a business manager position which potential recruiters consider to be important. We propose conjoint analysis as an appropriate tool to determine the recruiters' preferences. Conjoint analysis is an experimental approach used as a tool for measuring customer preferences regarding the attributes of a product or a service, as well as for understanding the development of an individual's preferences. The conducted research and the obtained results have the purpose to inform potential candidates about various recruiters' expectations, and to help university teachers design their courses.

Keywords: key competencies, business manager, recruiters, Conjoint analysis, preferences

1. Introduction

The employees are the key to success for any company. Therefore, the companies that recognize this fact and manage to select and retain quality staff are more likely to achieve competitive advantage. To choose good quality staff means to organize the recruitment process properly and to select the candidates capable of being efficient and loyal to the company.

Recruitment is the process of identifying and hiring the best-qualified candidate from a previously generated applicant pool so as to meet the goals of a company and to satisfy current legal requirements (Catano et al., 2001). In the recruitment process, candidates' competences have a vital role. There are a number of papers devoted both to concepts of competence and to various models of the key competencies. According to Dalton (1997), a competency model describes "motives, traits, and so forth as a set of desired behaviors for a particular job position or level". As such, a competency model is an "occupational profile" typically developed for individual occupations but also extensible to occupational groups. Competency models are used to tie job specifications to the organizational strategy; the competencies then function as a common language (Lievens et al.,2004) which is used to identify the critical success factors driving performance in organizations (Delamare Le Deistand & Winterton, 2005).

The objective of this paper is to determine the list of key competencies for a business manager position which potential recruiters consider particularly valuable. For that purpose we employ conjoint analysis.

Conjoint analysis is an experimental approach used for measuring customer preferences regarding the attributes of a product or a service (Kuzmanović & Obradović, 2010; Venkatesh et al., 2012). Originally developed in the field of mathematical psychology, conjoint analysis has attracted considerable attention, especially in marketing research, as a method that portrays consumer decisions (Iyengar & Jedidi, 2012). However, few studies have used the conjoint analysis within the labor market. Using conjoint analysis Baker and McGregor (2000) determined the relative importance of seven criteria on hiring accountants and, at the same time, examined whether these values differ among different groups of individuals. Biesma et al. (2007) applied conjoint analysis to estimate preferences of employers for key competencies of master level graduates entering the public health field.

This paper is organized as follows. Section 2 provides an overview of the literature related to the models of key competencies. Section 3 describes conjoint analysis, a method we have proposed as an appropriate tool for determining the importance of a variety of competencies from the recruiters' point of view, as well as to isolate the most important ones in the process of candidate selection. A survey was conducted and most important findings are given in Section 4. Section 5 provides the concluding remarks.

2. Models of key competencies

In today's environment characterized by high rate of unemployment and high pressure to rationalize production, as a result of increased competition causing an increase in labor productivity, it is crucial for the company to hire the best people possible. In other words, technological and organizational changes lead to an increased need for staff equipped with higher and better skills (Elias & McKnight 2001; Green et al., 2001; Stasz, 2001) which is primarily achieved through education and training (Borghans et al., 2001).

To respond to the demands of the modern age, it is necessary for an organization to perform quality and efficient recruitment, selecting the right people for the job, and efficiently using human resources, motivating employees, eliminating the leaves, introducing fair remuneration and promotion systems, and making decisions based on current information (Mitchell et al., 2011). Expert recruitment and orientation of employees enables assigning the employees on the basis of their skills, attitudes and work motivation.

Although there is no direct and linear relationship between the recruitment of personnel and organizational efficiency and performance, it is reasonable to assume that improved personnel selection will result in better performance (Kurtz & Bartram, 2002). In addition to potential benefits directly related to good recruitment, there are lower costs of poor selection of candidates, as well as the risk of rejection of good candidates who can be hired by competitors (Robertson et al., 2002).

The question is to determine the capabilities, skills and competencies which a candidate should possess so he/she could be chosen. In addition, some other potential problems can occur, as when the candidate's wishes and potentials do not align with the demands of the employer.

In response to the above question, numerous studies have been conducted. In terms of qualities and skills a candidate should possess (using notions of many authors) two types of competencies: field-specific competencies and generic competencies. Generic competencies can be defined as the combination of learning, analytical and problem-solving abilities applicable in various domains (Heijke et al., 2003). Several studies investigated the role of key competencies for the labor market (Borghans et al., 2001; Stasz, 2001; Heijke et al., 2003). Some emphasize the role of field-specific competencies on labor market outcomes (Mane, 1999) while others stress the importance of generic competencies (Stasz, 2001).

According to Ruetzler et al. (2010), there are seven criteria to evaluate a candidate: academic grade point average (GPA), interpersonal skills, interview preparedness, the ability to work with others, alignment with organizational culture, and work experience.

Since a student's primary "job" is to study academic materials, a student's GPA is often seen as an equivalent to an employer's performance evaluation. The use of the GPA as a selection variable is controversial; however, when a job candidate has limited work experience, the GPA provides an apparently objective criterion to which recruiters can turn in screening applicants and establishing a candidate's potential (Kuncel et al., 2004). Although some studies suggest that the overall GPA is not considered to be an important selection criterion (Baker & McGregor, 2000; Guo et al., 2009; McKinney et al., 2003), there is support elsewhere for the proposition that GPA is used as a selection tool and may well be important when identifying a set of candidates to be interviewed (Roth & Bobko, 2000).

Interpersonal skills, which include listening as well as oral and written communication abilities, are widely identified across the literature as important competencies. Interpersonal skills – sometimes referred to generically as communication skills – have been ranked among the five most important skills for entry-level managers by hospitality industry leaders (Chung-Herrera et al., 2003; Fjelstul, 2007; Mayo & Thomas-Haysbert, 2005; Tesone & Ricci, 2005).

Little research exists that directly examines the preparedness of a candidate for an interview or the impact of such preparation on job offers. A recent study addresses the effects of preparation for interviews that involves faculty members conducting mock interviews so that candidates can "rehearse" performing in the interview setting, concluding that mock interviews lead to increased confidence and enhanced interviewing skills (Hansen et al., 2009).

Having the ability to work with others involves being able to work as a team member as opposed to behaving as an individual who prefers to work alone or does not like to help others. Being team-oriented is a highly valued trait in most industries. Tesone and Ricci (2005) found that the ability to work as part of a team was the number one skill identified by industry practitioners. In Fjelstul's (2007) research, teamwork ranked as the second most important skill. Baker and Harris (2000) discovered that students specialized in technology or information systems felt that the ability to work with others was one of the two most important traits in the eyes of recruiters.

Alignment with an organization's culture and mission occurs when a candidate's values and beliefs are consistent with those espoused in the organization's internal literature, such as its mission statement. An employee's "emotional commitment" and sense of identity with a company lead to greater performance both of an employee and a firm (Hemp, 2002). A meta-analysis conducted by Kristof-Brown et al., (2005) found that person-organization fit, the compatibility between a person and an organization, correlated significantly with the intent to hire and with actual job offers.

3. Conjoint analysis

Conjoint analysis is a multivariate technique that can be used to understand how an individual's preferences are developed. Specifically, the technique is used to gain an insight into how consumers value various product attributes based on their evaluation of the complete product (Kuzmanovic & Martic, 2012). Conjoint analysis, sometimes called 'trade-off analysis', reveals how people make complex judgments. The technique is based on the assumption that complex decisions are made not based on a single factor or criterion, but on several factors CONsidered JOINTly, hence the term Conjoint. Conjoint analysis enables the investigator to better understand the interrelationship of multiple factors as they contribute to preferences.

Conjoint experiments involve individuals being asked to express their preference for various experimentally designed, real or hypothetical alternatives. These hypothetical alternatives are descriptions of potential real-world alternatives in terms of their most relevant features, or attributes; hence, they are multi-attribute alternatives (Parker & Schrift, 2011). Lists of attributes describing single alternatives are called profiles. Typically, the set of relevant attributes is generated by reviewing the research literature and performing pilot research with techniques such as focus groups, factor listings, or repertory grids. Two or more fixed values, or "levels", are defined for each attribute, and these are combined to create different profiles.

Obviously, the number of possible profiles increases immensely with the increasing number of attributes or levels. A set of profiles that consists of all the possible combinations of the attribute levels is the full-factorial experimental design. As in most conjoint studies, a large number of possible combinations of attributes and levels make it impossible to generate a design based on all the possible combinations. Namely, such designs are impractical because the subjects' cognitive limitations and time constraints do not allow considering a large number of profiles. Thus, fractional factorial designs, which assume no interactions between attributes and ensure the absence of multicollinearity, are used to reduce the number of profiles.

The experimental procedure involves profiles being presented to respondents who are invited to express their preference by rating or ranking these profiles. Preference functions are estimated from this data, using OLS regression for rating the data, and ordinal techniques when the rankings are obtained.

Having collected the information on individual preference, the responses need to be analyzed. To determine a relative importance of different attributes to respondents, the trade-offs that individuals make between these attributes, as well as the overall benefit taking into account these trade-offs, a relationship must be specified between the attributes' utility and the rated responses. The simplest and most commonly used model is the linear additive model. This model assumes that the overall utility derived from any combination of attributes of a given good or service is obtained from the sum of the separate part-worths of the attributes. Thus, respondent i's predicted conjoint utility for profile j can be specified as follows:

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$$U_{ij} = \sum_{k=1}^{K} \sum_{l=1}^{L_k} \beta_{ikl} x_{jkl} + \varepsilon_{ij} \quad , \qquad i = 1,...,I, \; j = 1,...,J \quad , \tag{1}$$

where I is the number of respondents; J is the number of profiles; K is the number of attributes; L_k is the number of levels of attribute k. $_{ikl}$ is respondent i's utility with respect to level l of attribute k. x_{jkl} is a (0,1) variable that it equals 1 if profile j has attribute k at level l, otherwise it equals 0. $_{ij}$ is a stochastic error term.

The parameters β_{ikl} are estimated by a regression analysis. These beta coefficients, also known as part-worth utilities, can be used to establish a number of things. Firstly, the value of these coefficients indicates the amount of any effect that an attribute has on overall utility of the profiles – the higher the coefficient, the greater the impact. Secondly, part-worths can be used for preference-based segmentation. Namely, given that part-worth utilities are calculated at the individual level, if preference heterogeneity is present, the researcher can find it. Respondents who place similar value to the various attribute levels will be grouped together into a segment. Thirdly, part-worths can be used to calculate the relative importance of each attribute, also known as an importance value. Importance values are calculated by taking the utility range for each attribute separately, and then dividing it by the sum of the utility ranges for all of the factors. The results are then averaged to include all of the respondents. If the market is characterized by heterogeneous customer preferences, it is possible to determine the importance of each attribute for each of isolated market segments.

Overall utility scores can be estimated for different combinations of attributes by inserting the appropriate levels into Equation 1. These utility scores can be further used to predict the market shares for each of the defined combinations. Finally, part-worths can be used to test the internal validity of conjoint analysis, i.e. the extent to which the results are consistent with economics theory, or, more generally, *a priory* expectations

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4. Empirical study

The main objective of this study was to identify the key competencies of candidates for the business manager position from the employers' point of view, but also to determine a most preferred candidate. The survey was fielded in Belgrade, Serbia, in May 2011. In total, 31 individuals answered the survey. While this sample size may be regarded as relatively small, it is not atypical for conjoint analysis application when the survey goal is investigational work, or an attempt to develop a hypothesis about a market (Orme 2006).

Study design

The first stage in the design of a conjoint analysis study is the selection of the attributes. We have defined ten key attributes based on literature review (Biesma et al., 2007; Ruetzler et al., 2010), and opinions of potential employers obtained within the pilot research. Having chosen the attributes, levels must be assigned to them. These should be realistic, plausible and capable of being traded. The attributes and levels chosen for this study are shown in Table 1.

Table 1. Attributes and their levels

Attribute	Level 1	Level 2	Level 3
Education	Bachelor	Master, general	Master, specialized
Work Experience	None	Internship	Employment
Foreign languages	One language	More languages	/
Computer skills	Basic	Advanced	/
Communication skills	Fair	Good	/
Problem solving skills and creativity	Fair	Good	/
Team working skills	Team worker	Individualist	/
Organizational skills	Average	Good	/
Proactivity	Highly	Insufficient	/
Interview preparedness	Insufficient	Full	/

The first attribute, "Education", refers to the fact that a candidate entering the selection process must have at least the Bachelor degree. In addition to Bachelor degree, the candidate may have a "general" master degree, or may be specialized in a specific field. The attribute "work experience" is chosen because employers often emphasized its importance during the pilot research. In this study we distinguish work experience in terms of either employment or internship. The internship most often refers to the three-month period of work during studies. The assumption is that all candidates are fluent in at least one foreign language (usually the English language). Therefore, we define two levels for this attribute. The first level corresponds to excellent reading, writing and good conversation in one foreign language, while the second level assumes the same for more than one languages. The candidate's preparedness for the interview indicates his willingness and desire for a given position. This attribute refers not only to how the candidate is informed about the company but also his attitude, manners and outfit. Therefore, we define two levels of this attribute: fully and insufficiently prepared. All other attributes are described using two levels, where one of them refers to the fair level while the other refers to a higher level of a certain skill.

Although many previous studies stressed the GPA as an important factor, the results of the pilot research we conducted indicate that this attribute is of negligible importance for the position of business manager. Therefore, we excluded it from this study.

Once attributes and attribute levels are selected, they must be combined to form different hypothetical profile of candidates for survey respondents to assign preference ratings. The attributes and levels in Table 1 gave rise to 2304 possible profiles ($3^2 \times 2^8$). To reduce this number of profiles to a manageable level, in this study a component of the statistical package SPSS 16.0 (Orthoplan) was used. Thus the 2304 possible profiles were reduced to 16. Two control profiles (holdout tasks) were added to the given design. These 2 profiles were not used by the conjoint procedure for estimating the utilities. Instead, the conjoint procedure calculates correlations between the observed and predicted rank orders for these profiles, as a check of the validity of the utilities. The 18 hypothetical profiles considered are shown in Table 2.

In order to elicit the preferences for the various profiles, in this study a rating approach was utilized. The respondents expressed their preferences for a particular candidate on a scale of 1 to 9, where 1 stands for absolutely undesirable, and 9 stands for absolutely desirable. The survey was conducted using the traditional "paper and pencil" method.

Table 2. Generated list of profiles

ID	Education	Work Experience	Foreign languages	Computer skills	Commun. skills	Problem solving and creativity	Team working skills	Organiz. skills	Proactivity	Interview prepare.
1	Master G	none	one	advanced	good	fair	teamwork	good	insufficient	insufficient
2	Bachelor	none	more	basic	fair	fair	individualist	good	insufficient	full
3	Bachelor	internship	more	advanced	good	good	individualist	average	insufficient	insufficient
4	Bachelor	employment	one	advanced	good	good	teamwork	good	highly	full
5	Master S	internship	more	basic	good	fair	teamwork	good	highly	insufficient
6	Bachelor	employment	more	advanced	fair	fair	teamwork	average	insufficient	insufficient
7	Master G	employment	more	basic	fair	good	individualist	good	highly	insufficient
8	Bachelor	none	more	basic	good	good	teamwork	good	insufficient	full
9	Master S	employment	one	basic	good	fair	individualist	average	insufficient	full
10	Bachelor	none	one	basic	good	good	individualist	average	highly	insufficient
11	Master G	internship	one	basic	fair	good	teamwork	average	insufficient	full
12	Bachelor	none	one	basic	fair	fair	teamwork	average	highly	insufficient
13	Master G	none	more	advanced	good	fair	individualist	average	highly	full
14	Master S	none	one	advanced	fair	good	individualist	good	insufficient	insufficient
15	Master S	none	more	advanced	fair	good	teamwork	average	highly	full
16	Bachelor	internship	one	advanced	fair	fair	individualist	good	highly	full
17*	Bachelor	internship	one	advanced	fair	fair	teamwork	average	insufficient	full
18*	Master S	internship	one	advanced	fair	good	teamwork	good	insufficient	full

* holdout profiles

Analysis and Results

In the entire sample, slightly more than half of the respondents were female (54,8%). Table 3 provides detailed demographic data.

Table 3. Demographic characteristics

Characteristics	Description	%
Industry	Bank	9.6
	Production company	19.4
	Sales company	29.1
	Service company	41.9
Position at the company	HR	38.7
	Sales manager	25.9
	Marketing manager	12.9
	Project manager	6.4
	Top manager	16.1
Working experience	Less than five years	54.8
	From six to ten years	32.3
	More than ten years	12.9

The results of the analysis are shown in Table 4 and Figure 1. Table 4 presents the (averaged) part-worth utilities of each level of the attributes, while Figure 1 is the graph description of the attributes importance.

The constant whose value is 5.771 (Table 4) represents a stochastic error obtained through regression analysis, and it is used to calculate the total utility of each profile. A high value of the Pearson coefficient, 0.983, confirms the high level of significance of the obtained results. Similarly, a high value of the Kendall correlation coefficient, 0.899, indicates a high level of correlation between the observed and the estimated preferences. The Kendall coefficient for two holdout profiles has a value of 1.000, which is an additional indicator of the high quality of the obtained data.

The signs of the part-worths are in line with the a priori expectations. For example, a negative sign is attached to the level which indicates that there is no work experience. Respondents showed the expected behavior for all other attributes, with the highest level having the highest utility. These results can be regarded as an indication of the theoretical validity of the questionnaire, i.e. the extent to which the results conform to the a priori expectations.

As Figure 1 shows, the most important attribute is "Proactivity", with an importance value of 16.69%. Slightly less important is the attribute "Work Experience", with a value of 15.22%. Attributes with a relatively higher importance are also "Interview preparedness" (12.08%) and "Education" (11.02%). A moderately important attribute is "Problem solving and creativity" (9.80%) followed by three equally important attributes "Computer skills", "Communication Skills" and "Team working skills" (importance value = 9.63%). By far the least important attributes are "Foreign Language" and "Organizational skills", whose importance values amount to 3.55% and 2.73%, respectively.

Table 4. Averaged part-worth utilities

Attribute	Attribute level	Part-worth utilities	Std. Error
Education	Bachelor	-0.164	0.114
	Master, general	-0.188	0.134
	Master, specialized	0.352	0.134
Work Experience	None	-0.427	0.114
	Practice	0.109	0.134
	Work	0.319	0.134
Foreign languages	One language	-0.087	0.086
	More languages	0.087	0.086
Computer skills	Basic	-0.236	0.086
	Advanced	0.236	0.086
Communication skills	Fair	-0.236	0.086
	Good	0.236	0.086
Problem solving skills and creativity	Fair	-0.240	0.086
	Good	0.240	0.086
Team working skills	Team work orientation	0.236	0.086
	Individual work orientation	-0.236	0.086
Organizational skills	Average	-0.067	0.086
	Good	0.067	0.086
Proactivity	Yes	0.409	0.086
	Insufficient	-0.409	0.086
Interview preparedness	Insufficient	-0.296	0.086
	Yes	0.296	0.086
Constant	5.771	0.095	
Correlations between observed and estimated preferences			
Pearson's R	0.983	Significance = 0.000	
Kendall's tau	0.899	Significance = 0.000	
Kendall's tau for 2 Holdouts	1.000		

Part-worth utilities reflect the sensitivity of respondents to change of attribute levels (see Figure 2). It may be noted that all attributes included in the study are extremely sensitive to level changes, but in the case of three-level attributes this sensitivity varies depending on the interval. For example, when we observe the attribute "Work Experience", the preferences decline much faster in the interval Internship-None than in the interval Employment-Internship. In the case of attribute "Education", only the best level (master specialized) increases the overall preferences, while the medium (master general) and lowest (bachelor) decrease them. These two levels have a negative sign of part-worth utilities.
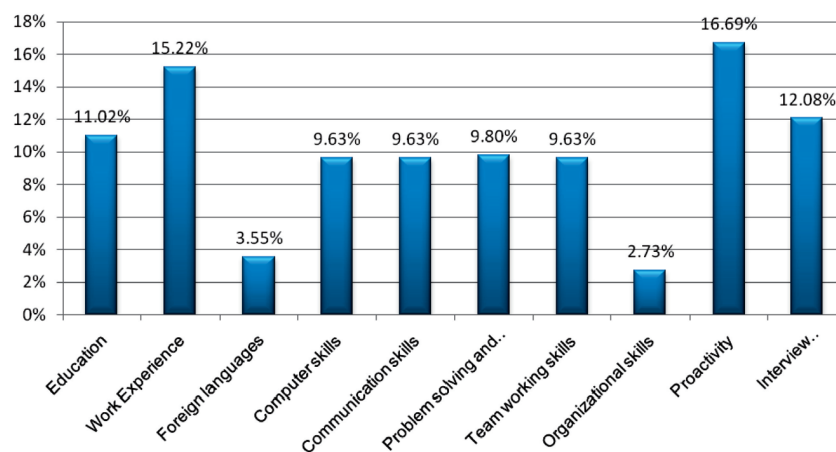

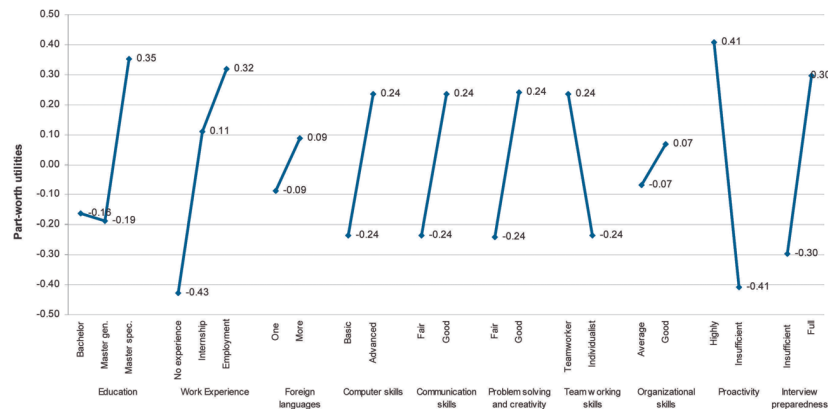**Figure 1.** Averaged attribute importance values

Figure 2. Part-worth utility functions

Characteristics that describe the "best" candidate are: Specialized Master degree in education, has work experience, speaks two or more foreign languages, has advanced computer skills, has strong communication skills, he/she is very creative and skilled in problem solving, oriented to teamwork, possess good organizational skills, is proactive and well prepared for the interview.

Conslusion

To determine the skills and competencies for the business manager position which recruiters particularly prefer conjoint analysis was used in this paper. To our knowledge, this is the first study to use this approach for that purpose in Serbia.

Research has shown that potential employers consider the proactivity as the most important attribute, while number of foreign languages and organizational skills are of least importance. They stressed that they more often pick proactive candidates due to the lack of time for the training of hired workers. Because of the shorter training, selected candidates must be skilled, resourceful and capable of quickly incorporating into the new work environment.

Since the goal of the research was to show the applicability of conjoint analysis to determine the recruiters' preferences toward key competencies for a business manager position, the findings obtained and presented above confirm that our task is successfully accomplished. The findings of the study are significant both on a theoretical and an applied levels. On a theoretical level, they add to our knowledge of the relative importance of some factors influencing recruiters' preferences. On the applied level, the results provide useful information both to students (the potential candidates) and university teachers (those that guide and educate candidates). Indeed, this information could help teachers to provide students more effectively with appropriate skills and competencies needed for their future employment.

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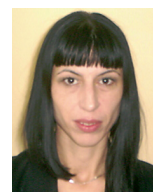
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