

The Influence of Demographical and Professional Characteristics on Managers' Risk Taking Propensity

Ivan Pavic¹ and Perica Vojinic²

Abstract

The purpose of this paper is to determine in what way certain demographic and professional characteristics influence managerial risk taking. The research is conducted using the questionnaire on a sample of middle and top level managers employed in small, medium and large Croatian hospitality companies. Research sample consists of 81 Croatian managers. The results of ordinal logistic regression and several statistical tests suggest that certain demographical and professional characteristics determine managerial risk taking. Age, education, management level, income and authority have positive, while dependents and size of a company have negative influence on risk taking propensity. Therefore, it is more probable that older managers with higher education who have lower number of dependents, higher income and authority, and who are employed at a higher level of management in a small hotel companies are greater risk takers comparing to younger managers with lower education who have more dependents, lower income and authority, and who are employed at lower levels of management in a medium and large hotel companies.

¹ University of Split, Livanjska 5, 21 000 Split, Croatia,
e-mail: ivan.pavic@efst.hr

² Department of Economics and Business Economics, University of Dubrovnik,
Lapadska obala 7, 20 000 Dubrovnik, Croatia,
e-mail: perica.vojinic@unidu.hr

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1 Introduction

Risk and risk taking propensity are important for managerial profession since very often managerial career depends on how well he/she deals with risk. General opinion is that managers are greater risk takers than other individuals, although empirical studies have shown that managers differentiate themselves (like other people) with respect to risk taking propensity. Managerial profession implies making risky decisions that usually have far-reaching consequences. Many important decisions are taken under conditions of imperfect information in which a manager's risk taking propensity exerts a powerful influence on the effectiveness of the decision. In most studies related to this issue the gender impact on risk taking propensity was examined. Although it is believed that some other characteristics influence risk taking propensity too, there is a paucity of studies testing such an assumption.

Regarding the fact that tourism presents one of Croatia's comparative advantages and regarding general specificity of hospitality industry, it can be concluded that risk is more present in hospitality industry than in other sectors of economy. Accordingly, managers employed in hospitality industry are more exposed to risk compared to managers employed in other sectors of economy. That is the reason why Croatian managers employed in hospitality industry were chosen as subjects of this study.

The main purpose of this paper is to determine whether certain characteristics influence managers' risk taking propensity, and if they do in what way. Determining these relations expands the theoretical and the practical knowledge related to the characteristics that determine managers' risk taking propensity. Knowledge of the relation between risk taking propensity and certain characteristics enables a preliminary assessment of individual's behaviour under uncertainty, without having a lot of other information about the individual being assessed. This knowledge enables a selection of managers for conducting assignments that require a certain attitude toward risk, without the necessity for direct measurement of risk taking propensity.

The characteristics that are analysed in this paper can be divided into two categories:

- Demographical characteristics: age, gender, marital status, number of dependents and income;
- Professional characteristics: manager's characteristics (management level, years of service and authority – number of directly responsible employees) and the characteristics of the hospitality enterprise in which a manager works (the size of the enterprise and ownership structure).

Methods of inferential and multivariate statistics were performed with the support of computer program SPSS 17.0 in order to investigate the influence of certain demographical and professional characteristics on risk taking propensity.

2 Literature Review

A vast amount of literature that examined an individual's characteristics that influenced risk taking propensity take into consideration gender as a determinant of risk taking propensity. Zinkhan and Karande (1991) used Choice Dilemma Questionnaire (CDQ) to determine the existence of gender and cultural differences between American and Spanish decision makers. Research was performed on the sample of 110 (33 female and 77 male) American graduate students of business economics from the University of Houston and 102 (27 female and 75 male) graduate Spanish students of business economics from Madrid School of Business. One way analysis of variance (ANOVA) showed greater risk taking propensity of Spanish, comparing to American students. In both samples males are greater risk takers than females.

Masters and Meier (1988) used Choice Dilemma Questionnaire to examine the existence of gender differences in risk taking propensity. The research was conducted on the sample of 50 entrepreneurships and managers from Kansas. Analysis of covariance suggested that statistically significant difference in risk taking propensity does not exist between entrepreneurships and managers, as well as between male and female entrepreneurships.

Johnson and Powell (1994) examined the existence of gender differences in making risky decisions between managers and employed people who are not managers. Two experiments were conducted. The examination of gender differences in making risky decision was conducted in the first experiment. The database was drawn from the random sample of 50 betting offices owned by Ladbrokes. The staff in these shops was instructed to mark discretely all bets placed by females during the period 23-30 April, 1991. The same was done for males. The sample consisted of individuals who were not employed on managerial positions and did not have managerial education. The results of descriptive statistics suggested that in this sample males were greater risk takers compared to females. The second experiment was conducted on a sample of individuals who had management education – 130 undergraduate students of final year (class of commerce), 84 male and 46 female, between 25 and 45 years. They were given an assignment which required them to make a risky decision. The results of Wilcoxon test suggest that there is no statistically significant difference by gender in risk taking propensity when they are making financial decisions.

Powell and Ansic (1997) examined whether the gender differences in risk taking propensity and strategy were a general characteristic of an individual or occurring due to contextual factors. In the first experiment the participants were told to make 12 completely separate insurance decisions. The sample consisted of

64 male and 62 female volunteers from the undergraduate and postgraduate student population. One way analysis of variance suggested that statistically significant gender difference does not exist in making insurance decisions. Second experiment was conducted using computer experimental approach that was compiled of financial decisions based on real financial data. The sample consisted of 66 male and 35 female students, volunteers from the undergraduate and postgraduate population. Results show that females have lower risk taking propensity compared to males. Furthermore, the results indicate that males and females have different strategies in financial decision making.

Schubert et al. (1999) performed one experiment to investigate gender differences in risk taking propensity related to decisions that are important for investors and managers. Undergraduate students from the University of Zurich and from the Swiss Federal Institute of Technology participated in this experiment. Regression analysis showed that females did not make less risky decisions compared to males.

MacCrimmon and Wehrung (1986, 1990) examined the influence of certain socio-economic characteristics on risk taking propensity. Three types of measures of risk propensity were used: measures derived from behaviour in hypothetical situations, measures derived from behaviour in naturally occurring risky situations, and measures derived from self-reported attitudes toward taking risks. The study was performed on a sample of 509 top-level business executives employed in enterprises from the USA and Canada. Multiple regressions and discriminant multivariate analysis were used to determine the relationship between risk taking propensity and the socio-economic characteristics of managers. The results suggest that: older managers are more risk-averse compared to younger managers; managers with more dependents are more risk-averse compared to managers with fewer dependents; managers with postgraduate training are greater risk takers than managers with a bachelor's degree or managers with only a high school degree. Furthermore, study has shown that managers with higher income are greater risk takers in comparison with managers with lower income. Regarding business characteristics, results have shown that managers employed in higher levels of management are greater risk takers than lower-level managers. This study has also shown that managers with higher authority are greater risk takers. Managers with more seniority are more averse to risk than managers with less seniority and managers in large firms are more risk averse than average. The study has shown that the most successful managers take more risks comparing to less successful managers.

Oztuk and Hancer (2009) studied the relationship between risk taking propensity of managers employed in hospitality industry on the middle levels of management and cooperative entrepreneurship. The sample consisted of 106 middle level managers employed in 4 and 5 stars hotels situated in Didim in Turkey. Factorial analysis, multiple regression and one way analysis of variance were performed and the results suggest that none of the risk factors has influence on cooperative entrepreneurship.

3 Methodology

The paper is based on empirical research conducted on a sample of top and middle level managers employed in small, medium and large sized Croatian hospitality enterprises. Survey method has been used for collecting data. Questionnaire that was sent to participants was compound of two parts: general questionnaire and Choice Dilemma Questionnaire. The aim of the general questionnaire is to collect data of managers' characteristics that were assumed to determine risk taking propensity.

The Choice Dilemma Questionnaire is the most widely used instrument for measuring risk-taking in studies related to decision making under uncertainty. The questionnaire is based on 12 hypothetical situations and it was originally developed by psychologist Kogan and Wallach (1964). Each situation presents a choice dilemma between safety and risky alternative. Participants have to indicate the probability of success (from 1 in 10 to 10 in 10) sufficient for them to choose the risky alternative. Maximal result for a participant is 120 and minimal 12 scores³ where lower result is associated with greater risk taking propensity.

The questionnaire was conducted in two phases in the period from November 2010 to June 2011. In the first phase, electronic version of questionnaires was sent on e-mail addresses of all hotels registered in the database of Croatian Chamber of Economy. In the second phase questionnaire was sent by regular mail to hotels that have not answered it in the previous phase.

The sample consisted of 81 managers. The biggest response was from large hotels. 46% of large, 29% of medium sized and - as it was expected - just 6% of small hotels took part in this survey. The collected data were analysed using the methods of inferential and multivariate statistics. The methods of inferential and multivariate statistics are performed with the support of computer program SPSS 17.0.

4 Ordinal Logistic Regression

The results of ordinal logistic regression that include all of the previously mentioned demographical and professional variables have shown the possibility of the existence of multicollinearity problem. Multicollinearity is a statistical phenomenon in which two or more variables are highly correlated. Subsequently, several variables are omitted from ordinal logistic analysis. For each of those omitted variables, a suitable statistical test was performed. Ordinal logistic model is as follows:

³ In further text CDQ scores.

$$\ln(\Theta_j) = \alpha_j + (-\beta_1 X_1 - \beta_2 X_2 - \beta_3 X_3 - \beta_4 X_4 - \beta_5 X_5 - \beta_6 X_6 - \beta_7 X_7)$$

where:

X_1 – age

X_2 – gender

X_3 – dependents

X_4 – education

X_5 – authority

X_6 – size of enterprise

X_7 – ownership structure of the hotel

α_j – evaluated parameters (intercept term)

β_j – estimated coefficients for predictor variables

The purpose of ordinal logistic regression is to examine the odds of dependent variable (risk taking propensity) is going to get values j or less regarding the values greater than j , respectively:

$$\Theta_j = \frac{P(Y \leq j)}{P(Y > j)}$$

Table 1: Categorical variables of ordinal logistic model

Risk taking propensity	1 – risk takers 2 – moderate risk takers 3 – risk averters
Gender	1 – male 2 – female
Education	1 – university and higher education 2 – college education 3 – high school education
Authority	1 –to 2 2 – 3 till 5 3 – 6 till 10 4 – more than10
Enterprise size	1 – small 2 – medium 3 – large
Hotel's ownership structure	1 – public ownership 2 – majority public ownership 3 – majority private ownership 4 – private ownership

Numeric variable *CDQ scores* is scattered. Therefore it is transformed in ordinal variable named *risk taking propensity*. New variable consists of three categories, approximately of the same size. The first category includes managers who are the biggest risk takers within the sample (those who have 64 and less collected scores); the second category includes managers who are moderate risk takers (those who have 65-78 collected scores); the third category includes managers who have collected 79 and more CDQ scores and who are the smallest risk takers within this sample.

Table 1 shows the coding of categorical variables which are included in the analysis. Numerical variables, *age* and *dependents*, are not included in this table.

Before proceeding to the examination of the individual coefficients, the reliability and the validity of the model is tested. The indicators in the Table 2 refer to model-fitting information. The difference of the two log likelihoods – the chi-square – has an observed significance level of less than 5%. This means that the null hypothesis, that the model without predictors is as good as the model with predictors, can be rejected.

Table 2: Model-fitting information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept only	177,756			
Final	106,411	71,345	13	,000

Table 3 shows the test of parallelism. The assumption that the regression coefficients are the same for all categories is tested. If the assumption of parallelism is rejected, the use of multinomial regression, which estimates separate coefficients for each category, should be considered. Since the observed significance level is large, there is not sufficient evidence to reject the parallelism hypothesis.

Table 3: Test of parallel lines

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	106,411			
General	92,734	13,677 ^b	13	,397

The goodness-of-fit-statistics is shown in table 4. Both goodness-of-fit measures are not statistically significant, so it appears that the model fits. Namely, significance greater than 5% means that there is no statistically significant difference between the observed and the expected frequencies.

Table 4: Goodness-of-fit statistics

	Chi-Square	df	Sig.
Pearson	126,415	145	,865
Deviance	106,411	145	,993

Table 5: Parameter estimates for the model

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Level	
							Lower Bound	Upper Bound
Threshold	[Risk taking prop. =1]	-8,619		12,751	1	,000	-13,350	-3,888
	[Risk taking prop = 2]	-5,477	2,246	5,944	1	,015	-9,879	-1,074
Location	Age	-,108	,044	6,031	1	,014	-,194	-,022
	Dependents	,675	,289	5,445	1	,020	,108	1,242
	[Gender1]	-,512	,602	,725	1	,395	-1,691	,667
	[Gender=2]	0 ^a	.	.	0	.	.	.
	[Education=1]	-4,430	1,057	17,578	1	,000	-6,502	-2,359
	[Education =2]	-2,012	,982	4,199	1	,040	-3,936	-,088
	[Education =3]	0 ^a	.	.	0	.	.	.
	[Authority=1]	3,929	1,055	13,874	1	,000	1,862	5,996
	[Authority =2]	2,308	,969	5,668	1	,017	,408	4,208
	[Authority =3]	1,642	,821	3,993	1	,046	,032	3,252
	[Authority =4]	0 ^a	.	.	0	.	.	.
	[Enterprise size=1]	-3,829	,864	19,662	1	,000	-5,522	-2,137
	[Enterprise size =2]	-2,105	,779	7,299	1	,007	-3,632	-,578
	[Enterprise size =3]	0 ^a	.	.	0	.	.	.
	[Ownership=1]	-1,321	1,092	1,462	1	,227	-3,462	,820
	[Ownership =2]	,057	,968	,003	1	,953	-1,841	1,955
[Ownership =3]	2,407	,951	6,410	1	,011	,544	4,271	
[Ownership =4]	0 ^a	.	.	0	.	.	.	

Since the model satisfies all adequacy tests, certain coefficients for predictor variables have been examined (Table 5).

The estimated coefficients which are statistically significant should be considered for interpretation. If the estimated coefficient is positive, that variable is associated to the higher category of dependent variable. In this case, a higher category of dependent variable *risk taking propensity* means higher CDQ scores (lower risk taking propensity). On the other hand, if the estimated coefficient is negative, that variable is associated with a lower category of ordinal dependent variable *risk taking propensity*. A lower category of the variable risk taking propensity means lower CDQ scores (higher risk taking propensity). In this model the following variables are statistically significant: *age*, *dependents*, *education*, *size of enterprise* and *authority*. The variable *ownership structure* is partly statistically significant, while *gender* is not statistically significant at all.

5 Risk taking propensity and managers' demographical characteristics

Demographical characteristics that have been taken into consideration in the ordinal logistic model are (Table 5): *age*, *dependents*, *gender* and *education*. *Gender* is the only non-significant variable, while all the other demographical characteristics are. In this section the estimated parameters for each predictor variable will be explained, and afterwards individual statistical tests will be performed in order to examine the relationship between risk taking propensity and demographical characteristics which have not been included in model.

It is believed that as a person gets older he/she becomes more conservative. This belief carries over to managers. The common stereotype is that young people are rash compared to older people. This belief is based on the assumption that if a person takes risks which turn out badly, an older person has less opportunity to start over, while a young person has a lot of time to try again. A number of studies have found that risk taking propensity decreases with ages (Kogan and Wallach, 1964, MacCrimmon and Wehrung, 1986). In this ordinal regression model the coefficient for variable *age* is negative and that suggest that as age increases, so increases the likelihood of lower scores on the ordinal dependent variable (greater risk taking propensity). This suggests that it is likely that older managers are greater risk takers compared to younger managers. This means that results are not in accordance with the common belief that older people are greater risk averters. This finding can be attributed to the fact that this research was conducted on a specific group of people – managers in the hospitality industry. Namely, older managers have greater business experience and therefore they will be willing to take certain risks (which younger managers will not take) since they have experienced those situations in the past and they are able to predict the possible outcomes of their decision.

The estimated coefficient for numerical variable *dependents* is positive. This finding suggests that managers with more dependents have lower risk taking propensity compared to managers who have fewer dependents or do not have dependents at all. This result is in accordance with the study undertaken by MacCrimmon and Wehrung (1990). The explanation for this finding can be the fact that managers who have more dependents have to take into account the negative potential effect on others if things turn out badly.

If the negative estimated coefficient for variable *gender* was statistically significant it would suggest that men are greater risk takers compared to women. However, this variable is not statistically significant. This means that there is no difference in risk taking propensity between men and women. While the results of some studies suggest the existence of gender differences in risk taking propensity (men are greater risk takers compared to women), other studies suggest that such a difference does not exist.

The reference category of variable *education* includes managers who have high school education. Estimated coefficients for categories that include managers with college and university (and higher) education are statistically significant and negative. Negative coefficient for the category of managers with college education means that it is more likely that those managers are greater risk takers (belong to the category of risk takers) compared to the reference category of managers with high school education. Negative coefficient for category of managers who have college education suggests that those managers are greater risk takers compared to managers with high school education. Former studies of this issue have not resulted in a single conclusion regarding the relationship between risk taking propensity and education.

Variables *marital status* and *income* are not included in ordinal logistic model, since their correlation with other variables in the model may result in multicollinearity. In order to determine the relationship between risk taking propensity and the previously mentioned variables, individual statistical test is performed for each variable. In order to determine the relationship between risk taking propensity and manager's marital status, non-parametric Mann-Whitney test is performed. Test results suggest that the relationship between risk taking propensity and manager's marital status is not statistically significant ($Z=-1,253$; $p.=0,210$). Kruskal-Wallis test is performed in order to examine if risk taking propensity depends on income. The results of the test suggest the existence of statistically significant difference in risk taking propensity and income. Managers with higher income are greater risk takers compared to managers with lower income.

6 Risk taking propensity and professional characteristics

Professional characteristics are divided on manager's characteristics and on the characteristics of hospitality enterprise in which the manager works. *Authority*

is the only manager's professional characteristic included in ordinal logistic model (Table 5). Authority is measured by the number of directly responsible employees.

The reference category for variable *authority* includes managers who have more than 10 directly responsible employees. Estimated coefficients for all the categories of variable *authority* are statistically significant and positive. In other words, it is more likely that managers who are superior up to 2 employees belong to higher category of dependent variable (they have lower risk taking propensity). The same is true also for the managers who have 3 to 5 and 6 to 10 employees – coefficients are positive. Accordingly, it can be concluded that it is more likely that managers with greater number of directly responsible employees are greater risk takers compared to managers with lower number of directly responsible employees. One explanation for this result can be the following: managers who are superior to greater number of employees are willing to take more risk because they can share a possible negative outcome with more persons.

Professional characteristics not included in the model are *management level* and *seniority* (years of service). Kruskal-Wallis test was performed to examine the existence of statistically significant difference between risk taking propensity and management level. The test proves the existence of statistically significant difference ($p = 0,001$) between managers' risk taking propensity and management level. The difference between seniority and risk taking propensity was examined by one way analysis of variance (ANOVA). The test suggests that a statistically significant difference ($p = 0,662$) between average years of service and manager's risk taking propensity does not exist.

Sizes of enterprise and *ownership structure* are two professional variables included in the model of ordinal logistic regression (Table 5). They refer to the characteristics of enterprise in which a manager works. Managers employed in large hotels present the reference category of variable *size of enterprise*. Since the estimated coefficients for other two categories of this variable are statistically significant and negative, it can be concluded that it is likely that managers employed in small and medium sized hotels belong to lower categories of dependent variable, i.e. they have higher risk taking propensity compared to managers employed in large hotels. This result can be explained by the following: in small hospitality enterprises one manager performs several jobs and therefore he/she has to take more risks compared to managers employed in medium and large hospitality enterprises. Namely, job division in medium and large hospitality enterprises is most often strictly defined and, therefore, managers in those enterprises are faced with fewer risky situations compared to managers employed in small enterprises. Additionally, managers in large enterprises are very often excluded from the uncertainty that is happening outside the company.

Managers employed in hotels with a completely private ownership are the reference category for variable *ownership structure* of the hotel in which the manager is employed. The estimated coefficient is statistically significant for only one category, which refers to hotels with majority private ownership structure. The negative estimated coefficient for that category suggests that it is more likely

that managers employed in majority privately owned hotels have higher risk taking propensity compared to managers employed in hotels with completely private ownership structure. The other two categories of variable *ownership structure* are not statistically significant. The general characteristics of variable *ownership structure* can be the explanation for that result. Namely, more than half of all the managers who participated in this survey are employed in hotels with completely private ownership structure (65%), while the rest of the managers (35%) are employed in hotels with different ownership structure. That is the reason for the presence of great disproportion in the category size of variable *ownership structure*, and this disproportion may have influenced the results.

7 Concluding remarks

Defining determinants of risk taking propensity enable a preliminary assessment of an individual's behaviour under uncertainty, without the necessity for risk taking propensity measurement. In theoretical framework, defining the determinants of risk taking propensity improves the predictive models of behaviour under risk and uncertainty. The results of ordinal logistic regression and several statistical tests suggest in what way certain demographical and professional characteristics determine managers' risk taking propensity. An overview of obtained results is shown in the model of risk taking determinants presented in Figure 1.

Subsequently, it is more probable that older managers with higher education who have lower number of dependents, higher income and authority, and who are employed at a higher level of management in a small hotel companies are greater risk takers compared to younger managers with lower education that have more dependents, lower income and authority, and who are employed at lower levels of management in a medium and large hotel companies.

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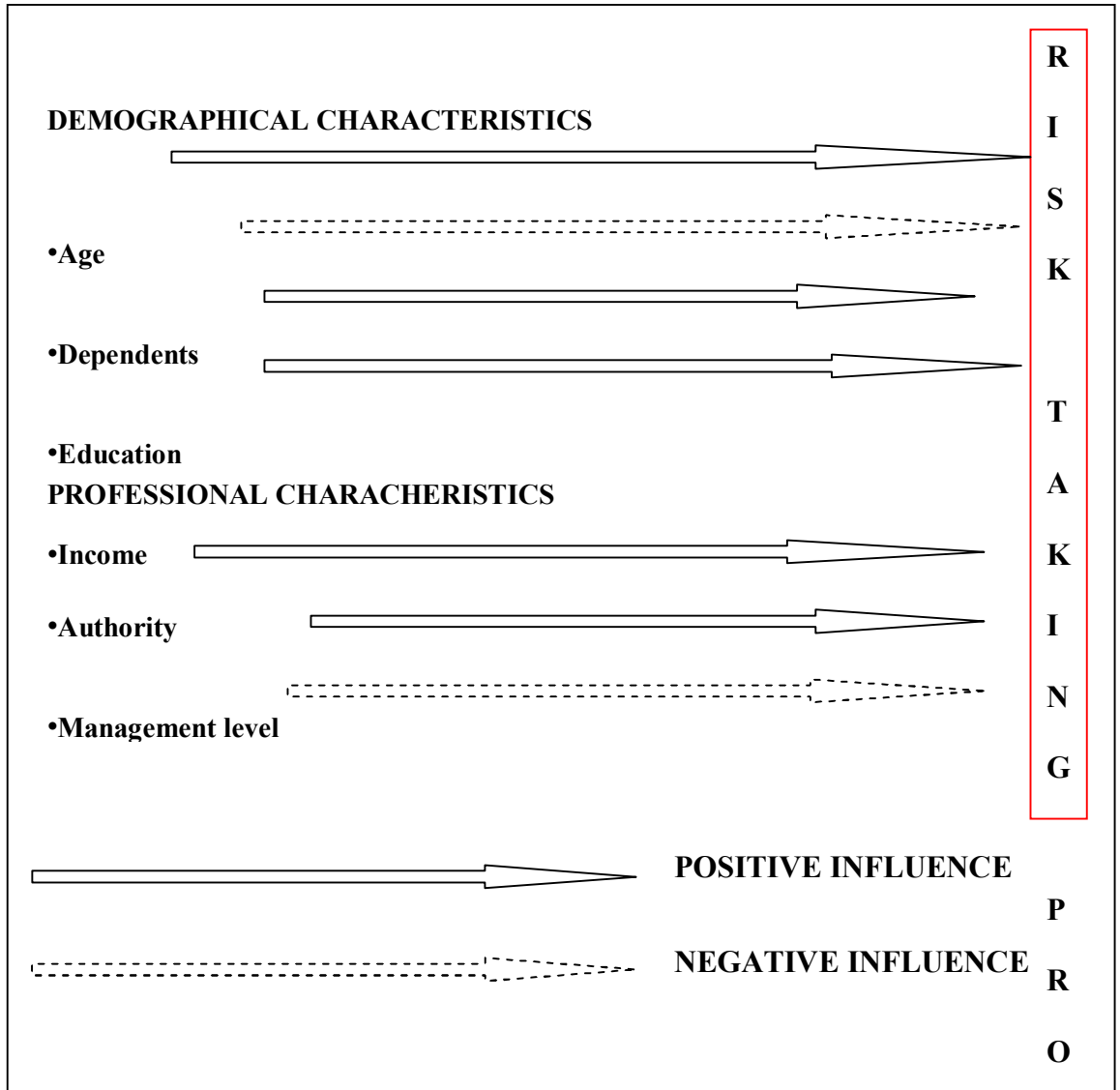


Figure 1: Risk taking determinants

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