



# Planned behaviour, gender, and attitudes towards entrepreneurship among business economics and electrical engineering students

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## ABSTRACT

This paper examines entrepreneurial intentions in the context of life course transitions among undergraduate students enrolled in the economics and electrical engineering faculties of the University of Belgrade. The entrepreneurial intention model is built upon the theory of planned behaviour, examining the associations between students' willingness to become an entrepreneur, their attitudes and perceptions about the importance of subjective norms, and perceived behavioural control variables. The data comes from a self-administered survey. The results show that attitudes towards entrepreneurship and behavioural control factors form positive and statistically significant associations with students' future entrepreneurial orientation, while subjective norms and risk-willingness add a little explanatory power to the initial regression models. In order to better understand the initial stage of life course transitions among the students, single regressions are estimated. All the factors appear as statistically significant with meaningful coefficient values, further showing that entrepreneurial prediction is highly gendered and depends on what faculty the student attends. This paper reveals for policy practitioners the main characteristics of young entrepreneurs-to-be and their understanding of the process of creating a business venture.

## KEYWORDS

entrepreneurial intention, gender, life course, planned behaviour, students

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## 1 INTRODUCTION

This paper builds conceptually on life course theory by studying the initial anticipatory phase of life course (Elder 1994), which is limited to the 18–29 age group (Becker and Moen 1999). At the same time, the paper empirically focuses on the entrepreneurial orientation of students and the possible transition from graduation to the choice of the entrepreneurial career as an initial work path (Burton et al. 2016; Shen et al. 2017; Laguía et al. 2019; Matysiak and Mynarska 2020; Wach et al. 2021; Maheshwari et al. 2022). This part of the paper is also conceptually developed around the theory of planned behaviour (Ajzen 1991). This theory is based on the assumption that intentions are an immediate predictor of one's actual behaviour. Many empirical studies use this theory to explain the process of realising entrepreneurial intention. These papers are based on the idea that theoretical antecedents, embodied in attitudes towards entrepreneurship, subjective norms, and perceived behavioural control form a statistically significant causal relationship with entrepreneurial intent (Lüthje and Franke 2003; van Gelderen et al. 2008; Liñán and Fayolle 2015; Shinnar et al. 2018). The main goal of this paper is to link the theories of life course and planned behaviour and to show how reliable these theoretical predecessors are as predictors of future entry into entrepreneurship for students in Serbia. The paper looks into how male and female students from two faculties perceive entrepreneurship as a possible career choice at some point in their lives after graduation.

Life course theory as an interdisciplinary paradigm focuses on the main changes (transitions) that characterise

people's lives, starting from the anticipatory phase, moving through the launching and establishment phases, then ending with the shifting gear phase (Elder 1994; Mitchel 2003). This approach to primary life transitions is mostly investigated in age studies (Benson and Furstenberg 2006; Andres and Adamuti-Trache 2008; Pesando et al. 2021; Turek and Henkens 2021). Close to the topic dealt with in this paper and built on the theoretical framework of life course are studies that focus on other aspects of life planning. These include choice of partner and family planning, housing and leaving the parental home, work paths, and learning after completing formal education (Benson and Furstenberg 2006; Schwanitz 2017; Schafer and Andersson 2020; Pesando et al. 2021; Atalay et al. 2022; Mooyaart et al. 2022).

Relevant empirical studies on planning in the context of life course transitions mostly use the timeline technique as a methodological framework (Cheraghi et al. 2019). In this paper, the self-administered survey method among university students is applied. The regression analysis is used to associate the key explanatory factors (attitudes, perceived behavioural control, subjective norms, and risk-willingness) with the entrepreneurial prediction variable. If regression models with all four explanatory factors are estimated at the level of each faculty and gender, attitudes and perceived behavioural control over the process of creating a firm have a positive and statistically significant impact on entrepreneurial intention. However, all four explanatory factors are statistically significant if single regressions are estimated. This estimation strategy was applied to test whether there are differences in planning when the effects of individual explanatory factors on

entrepreneurial intentions are examined, as well as their joint impacts on the risk-willingness variable. In this way, gender differences that affect perceptions of opportunities and constraints were added to the analysis.

The rest of the paper is divided into the following sections. The second section reviews the relevant literature and provides theoretical conceptualisation for the main research hypotheses. The third section describes the methods used to analyse entrepreneurial prediction and provides some descriptive statistics based on real-time data. The fourth section focuses on the key findings derived by applying the initial statistical analysis and advanced regression methods, while the fifth section discusses the main findings. The last section presents the general conclusion of the paper.

## **2 LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **2.1 RELEVANT LITERATURE REVIEW**

Recent literature relevant to the topic of this paper can be clustered into several related areas. One strand of literature focuses on life course transitions and gender, adding to the research on the mediating role of gender, especially when its influence on entrepreneurial intention is examined (Andres and Adamuti-Trache 2008; Camelo-Ordaz et al. 2016; Cheraghi et al. 2019). Cheraghi et al. (2019) tested the model built upon the life course theory and combined two sets of data applying a cross-country approach. They show that societies with less gender equality lose a certain entrepreneurial potential, since the gender gap in participation in entrepreneurship increases due to a decrease in

the participation of men, which coincides with the launching phase of the life course. Camelo-Ordaz et al. (2016) examined the mediating impact of behavioural perception factors, such as self-efficacy, while studying the causal links between gender and entrepreneurial intent on a sample of entrepreneurs and non-entrepreneurs. They found that self-efficacy plays a mediating role when the association between gender and entrepreneurial intent is established in a sample of non-entrepreneurs. However, that impact weakens for entrepreneurs. Similarly, examining a sample of young adults over a period of 15 years, Andres and Adamuti-Trache (2008) showed that their life course transitions are largely determined by external factors and socioeconomic background. These differ significantly between men and women.

All these studies connect the main concepts of life course and planned behaviour theories, taking the variables from theories and including them in empirical models to explain the differences between the entrepreneurial intentions of men and women. In this respect, several additional papers focus on entrepreneurial career choice and life course transitions (Aldrich and Kim 2007; Burton et al. 2016). In their review of the research directions that connect life course trajectories and transitions to entrepreneurship, Burton et al. (2016) envisage the importance of different phases of the life course, especially the launching and shifting gear phases. Focusing on other studies and examining which factors influence the work path dynamic, they conclude that work experience and organisational context affect career changes and work transitions. These studies therefore focus on adults. On the other hand, Aldrich and Kim (2007) studied the influence

of parents' occupational choice as entrepreneurs on children's entry into entrepreneurship across different life course phases. The authors isolated a larger effect during childhood, which gradually decreases and produces a smaller impact in adulthood.<sup>1</sup>

When it comes to focusing on the business path, relevant recent papers can be classified into those dealing with entrepreneurship as a future career choice (Aldrich and Kim 2007; Burton et al. 2016), life course and entrepreneurial motivation (Jayawarna et al. 2013; Jayawarna et al. 2014; Alam et al. 2019), prediction of entrepreneurial orientation among students (Shen et al. 2017; Laguía et al. 2019; Zisser et al. 2019; Wach et al. 2021; Maheshwari et al. 2022), and the life course of entrepreneurs (Davis and Shaver 2012; Zampetakis et al. 2016; Jayawarna et al. 2021; Zhao and Yang 2021).

Studies that have so far dealt with entrepreneurial prediction among students in Serbia in comparison with selected countries in the region include Pejić Bach et al. (2018), Rajh et al. (2018), Turuk et al. (2020), Jovičić Vuković et al. (2020), and Ognjenović (2022). Those studies use antecedents from the theory of

planned behaviour to explain students' future entry into entrepreneurship. Attitudes towards entrepreneurship can be developed through entrepreneurial education, which is assumed to have a positive impact on students' future entrepreneurial orientation (Barba-Sánchez and Atienza-Sahuquillo 2018), through an apprenticeship in an environment that nurtures an entrepreneurial culture, or the role that self-employed parents can pass on to their children (van Gelderen et al. 2008; Franco et al. 2010; Meliou and Edwards 2018). Subjective norms are embodied in the importance given to significant others who support those who try to realise their entrepreneurial venture. This does not only have to be the closest family members or friends; an entrepreneurial idea can also be realised through institutional support or project financing (Law and Breznik 2017). All these factors have a positive impact on future entry into entrepreneurship and career planning at some stage of life course. Perceived behavioural control, on the other hand, reflects the extent to which future events related to the realisation of entrepreneurial intention can be controlled (Liñán and Fayolle 2015; Laguía et al. 2019).

## 2.2 CONCEPT AND RESEARCH HYPOTHESES

In comparison to other research that has been done for Serbia (Rajh et al. 2018; Jovičić Vuković et al. 2020; Ognjenović 2022), the added value of this paper is that it focuses on two groups of students – economics and engineering – as well as students' business path and entrepreneurial intentions within the framework of life course. Thus, this paper based on life course theory draws conclusions on how male and

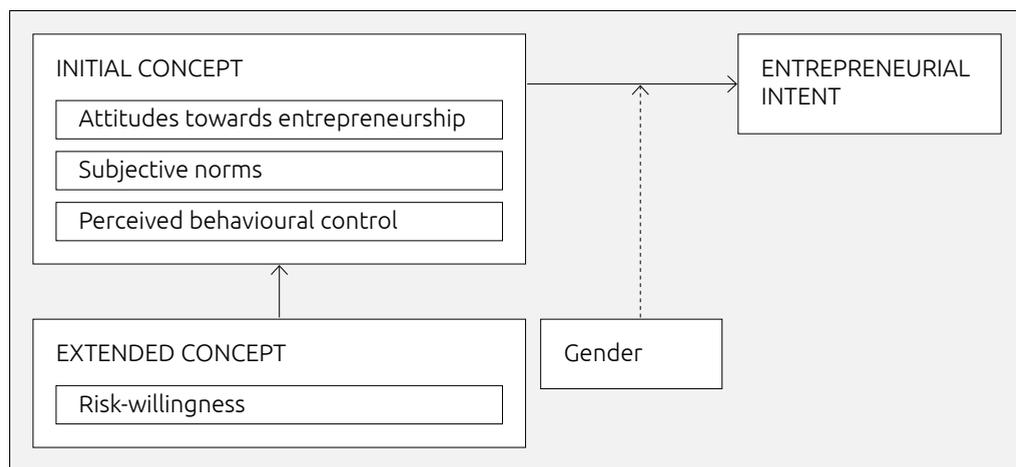
<sup>1</sup> It is worth mentioning that the important aspects of life course theory are embodied in key life events regarding family, housing, and additional education sphere. These topics will not be empirically studied in this paper due to the exclusive use of data for business path studies. Relevant recent studies have researched family formation in the context of the transition to adulthood, changes of socioeconomic background, and cross-country perspectives (Benson and Furstenberg 2006; Schwanitz 2017; Pesando et al. 2021; Mooyaart et al. 2022). Housing decisions as an important life course transition are also studied in the context of separation from family, living together with a partner, marriage, and the decision to have children (Schafer and Andersson 2020; Atalay et al. 2022).

female students in Serbia with different entrepreneurial backgrounds are thinking about choosing entrepreneurship as their business path after graduating from university. A theoretical background for research hypotheses (Ajzen 1991; Elder 1994; Becker and Moen 1999) and empirical foundations (Lüthje and Franke 2003; van Gelderen et al. 2008; Liñán and Fayolle 2015; Shen et al. 2017; Shinnar et al. 2018; Laguía et al. 2019; Zisser et al. 2019; Wach et al. 2021; Maheshwari et al. 2022) is taken from the literature quoted in the previous sections of this paper.

The conceptualisation of the research hypotheses is based on theoretical foundations of planned behaviour (Ajzen 1991). Applying this theory to researching the entrepreneurial intentions of students, one can assume that the key theoretical antecedents may be used to test empirically causal links between them. The research model encompasses the initial concept built upon attitudes, norms and behavioural control, and an extended version with risk-taking propensity. Gender is considered a moderating factor of the relationships between

entrepreneurial intention and explaining factors (see Figure 1). These relationships are tested empirically on a combined sample, as well as on the samples of each group of students. This model can be used to predict the business path of students in young adulthood, providing relevant conclusions for the initial stage of life course transitions and the promotion of entrepreneurship.

Attitudes towards entrepreneurship, subjective norms, and perceived behavioural control are the most frequently investigated factors regarding the future vocation of an entrepreneur (Aldrich and Kim 2007; Burton et al. 2016). Positive attitudes towards entrepreneurship, significant others, and role models, as well as perceptions of behavioural control are all found to be potentially significant contributors towards the realization of entrepreneurial ventures (van Gelderen et al. 2008; Liñán and Fayolle 2015; Shinnar et al. 2018; Laguía et al. 2019, etc.). The willingness to take risks embodied in the recognition of opportunities and limitations may be perceived differently by men and women (Cheraghi et al. 2019);



**Figure 1.** Research model of entrepreneurial prediction with moderated impact of gender

it is empirically confirmed that men are more willing to take risks than women (Camelo-Ordaz et al. 2016). However, it is possible to find studies that show that male participation in entrepreneurship decreases in societies with low gender equity, especially in the launching phase of the life course (Cheraghi et al. 2019).

Derived from previous findings, the following research hypotheses are investigated in this paper.

**Hypothesis 1:** Attitudes towards entrepreneurship, subjective norms, and perceived behavioural control factors are positive predictors of entrepreneurial intent.

**Hypothesis 2:** Risk-taking propensity positively affects entrepreneurial intention.

Life with a partner, family planning, and the understanding of women's traditional role in society influence women, on average, to opt for a less risky career at the beginning of their business path. In numerous studies it has been shown that gender has a moderating role in explaining the relationships between entrepreneurial intention and its antecedents (Andres and Adamuti-Trache 2008; Camelo-Ordaz et al. 2016; Pejić Bach et al. 2018; Cheraghi et al. 2019; Turuk et al. 2020).

**Hypothesis 3:** In the anticipatory phase of the life course, female students are less likely to take a risk and choose an entrepreneurial career than their male counterparts.

Students of economics and engineering may have dissimilar propensities towards entrepreneurship derived from differences in the key factors that influence the realisation of their entrepreneurial intentions. Some studies have shown that entrepreneurial education has a positive impact on entrepreneurial orientation and future career planning

(Burton et al. 2016; Shen et al. 2017; Barba-Sánchez and Atienza-Sahuquillo 2018; Laguía et al. 2019; Matysiak and Mynarska 2020; Wach et al. 2021; Maheshwari et al. 2022). Based on these constructs, a research hypothesis may be derived.

**Hypothesis 4:** Economics students are significantly more inclined towards entrepreneurship than electrical engineering students.

These hypotheses are tested in the fourth section. The effects of individual variables on entrepreneurial intentions are estimated using the conceptual research model (Figure 1) and their statistical significance, as well as the direction of the relationship, is further examined.

### 3 DATA AND METHOD

#### 3.1 DATA COLLECTION AND INSTRUMENTS

The research design and data collection process used in this paper were developed in work published by Rajh et al. (2018). The extended data set, collected on a sample of Serbian students, is further examined in Ognjenović (2022). The survey questionnaire contains questions based on the theoretical concepts that help predict the entrepreneurial orientation of students from two faculties. The questionnaire was also designed to collect data on students' attitudes toward entrepreneurship and an entrepreneur's possible choice of career based on their understanding of the impact of social norms, accompanying risks, and their ability to control the future through the process of forming and running their own business. Thus, only students from two faculties of the University of Belgrade participated in this research: the Faculty of Economics (FE) and the Faculty of Electrical Engineering (FEE). This may be

considered a limitation of this research, as the survey was conducted only in the most developed part of the country, the Belgrade region, and only students from the state university participated.

The students were invited to take part in this research. The data collection method included pen-and-paper personal interviews (PAPI) while students attended classes. Usually, the questionnaires were filled out at the beginning of the course after a short introduction from the person who collected the completed questionnaires. The survey was conducted during the 2016/2017 schooling year at the beginning of the winter and summer semesters. The survey was first organised at the FE, then extended to the students of the FEE. At both faculties, the data collection process was finalised within one week. The sampling frame consisted of all full-time students from the second to the fourth year of study. At the FE, the sample consisted of students who opted for business majors, while at the FEE, students of management majors were selected. The initial idea was to include information about the level of entrepreneurial skills among students in the sample, especially considering that students of technical faculties do not necessarily focus on entrepreneurship during their education. According to the weekly schedule, all students who attended a class on a specific day were given a chance to fill out the questionnaire. Since the students knew about the survey in advance, only those who wanted to fill out the questionnaires responded. Instead of asking students to fill out the questionnaire online, this method was used to get as many students as possible to respond. The final sample contains 309 and 307 completed questionnaires among the FE and FEE students respectively.

This analysis is based on real-time survey data collected from a sample of undergraduate students. The data presents students' views about a specific topic. Consequently, this data set is restricted to the student population only. This research cannot be repeated on the same (or a similar) sample of former students, which means that further conclusions about their planning for the future or realisation of their entrepreneurial intent cannot be drawn. However, this data set contains students' answers regarding the topics of interest for the assessment of entrepreneurial prediction among young educated people. Despite these limitations, it provides a basis for drawing reliable conclusions based on differences between the faculties, students' gender, year of study, and age. Socioeconomic characteristics, including sources of income, housing, partner, and professional status of parents were not included in the survey questions.

### 3.2 VARIABLES AND METHOD

Table 1 presents some descriptive statistics of the sample of students. The students of the two faculties differ by gender; the distribution of students of economics is skewed towards young women, while young men constitute the majority of the sample of electrical engineering students. Students do not differ by average age; however, the maximum age of the FEE students is three years higher than in the sample of FE students. The most considerable difference between the samples is noticeable when the year of study is observed. There is a similar share of third-year students in both samples; however, the percentage of second- and fourth-year students differs substantially between the samples.

**Table 1.** Socio-demographic characteristics of students

Variable/statistics	Faculty/students	
	Economics	Electrical engineering
<b>Gender (%)</b>		
Women	76.7	36.2
Men	23.3	63.8
<b>Age (years)</b>		
Mean	21.6	21.9
Standard deviation	1.2	1.2
Minimum	19	20
Maximum	27	30
<b>Study year (%)</b>		
First	0.3	0.0
Second	33.0	7.5
Third	47.3	46.9
Forth	19.4	45.6
Observations	309	307

Source: Self-administered survey.

In addition to variables that describe the main characteristics of students from the two selected faculties, such as gender, age, and year of study, four (theoretical) explanatory variables are included in the analysis of students' entrepreneurial intentions in the context of life course transitions. Each of these four variables is derived from a set of questions (see Table 3). Two variables – 'attitudes towards entrepreneurship' and 'perceived control factors' – consist of four items, while the variables 'subjective norms' and 'risk-taking propensity' have three items. Entrepreneurial prediction is a dependent variable derived from six questions (see Table 4). Van Gelderen et al. (2008) have used similar variables in the analysis of entrepreneurial intentions, as have other authors, including Lüthje and Franke (2003) and Shinnar et al. (2018).

In this paper, theoretical variables are measured on a five-point Likert scale, where 1 stands for strongly disagree,

3 expresses indifference, and 5 means the respondent strongly agrees with the assertion. Other authors have used similar measurement scale. For example, Lüthje and Franke (2003) first tried a five-point scale, but then decided that a four-point scale was more reliable. This paper follows research previously conducted by Rajh et al. (2018), which uses a five-point scale. Pejić Bach et al. (2018), for example, used a seven-point scale in an extended application of planned behaviour theory while researching students' entrepreneurial intentions. A similar approach has been used in other studies, as shown by Liñán and Fayolle (2015).

A qualitative analysis of selected variables is provided in the following section. The indicator values signify the high internal reliability of the variables used in the analysis. The multivariate factor analysis was applied as one of the most used techniques for extracting common factors from a set of related questions.

**Table 2.** Correlation coefficients

Item	Dep.		Explanatory variables				Age			Year of study				Sex
	El	Attit.	Cont.	Norm	Risk	≤21	22–23	24+	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Fem.	
Combined sample of students														
El	1													
Attit.	.72	1												
Cont.	.61	.48	1											
Norm	.27	.31	.30	1										
Risk	.19	.18	.25	.09	1									
≤ 21	-.03	-.01	.02	.04	.05	1								
22–23	-.02	-.00	-.07	-.04	-.06	-.90	1							
24+	.12	.03	.11	.00	.01	-.20	-.23	1						
1 <sup>st</sup>	-.03	-.02	-.02	-.01	.07	.05	-.04	-.01	1					
2 <sup>nd</sup>	.06	.07	.10	.07	.09	.52	-.47	-.11	-.02	1				
3 <sup>rd</sup>	-.09	-.04	-.09	-.10	-.09	.14	-.09	-.11	-.04	-.48	1			
4 <sup>th</sup>	.05	-.01	.01	.05	.02	-.60	.50	.21	-.03	-.35	-.65	1		
Fem.	-.08	-.03	-.03	.00	-.07	.04	-.02	-.06	.03	.08	.03	-.11	1	
Students of economics														
El	1													
Attit.	.70	1												
Cont.	.56	.43	1											
Norm	.24	.29	.28	1										
Risk	.19	.18	.25	.05	1									
<= 21	.04	.06	.06	.15	.15	1								
22–23	-.10	-.07	-.10	-.15	-.13	-.91	1							
24+	.12	.01	.07	.00	-.04	-.23	-.20	1						
1 <sup>st</sup>	-.05	-.03	-.03	-.01	.10	.06	-.05	-.01	1					
2 <sup>nd</sup>	.10	.07	.16	.13	.15	.63	-.56	-.16	-.04	1				
3 <sup>rd</sup>	-.16	-.07	-.18	-.10	-.09	-.21	.25	-.09	-.05	-.66	1			
4 <sup>th</sup>	.08	.00	.05	-.03	-.08	-.49	.36	.31	-.03	-.34	-.46	1		
Fem.	-.10	-.01	-.02	.08	-.16	-.06	.08	-.05	.03	-.10	.09	-.00	1	
Students of electrical engineering														
El	1													
Attit.	.74	1												
Cont.	.63	.49	1											
Norm	.30	.33	.34	1										
Risk	.20	.18	.25	.14	1									
<=21	-.13	-.11	-.04	-.08	-.04	1								
22–23	.07	.08	-.02	.08	.01	-.90	1							
24+	.12	.05	.15	.00	.07	-.17	-.26	1						
1 <sup>st</sup>	.	.	.	.	.	.	.	.	1					
2 <sup>nd</sup>	-.11	-.03	-.10	-.01	.00	.34	-.31	-.06	.	1				
3 <sup>rd</sup>	-.02	-.02	-.01	-.11	-.10	.50	-.44	-.12	.	-.27	1			
4 <sup>th</sup>	.08	.03	.06	.11	.10	-.68	.60	.16	.	-.26	-.86	1		
Fem.	-.17	-.14	-.14	-.04	.00	.03	.00	-.08	.	.02	-.03	.02	1	

Note: El, Attit., Cont., Norm, and Risk stand for entrepreneurial intention, attitudes, behavioural control, subjective norms, and risk-taking propensity.

Source: Self-administered survey.

The analysis of students' entrepreneurial orientation was conducted using linear regression methods. Before the linear regression models were estimated, some descriptive statistics were calculated in order to reveal preliminary associations between the selected variables. Also, the differences among students were analysed both between the two faculties and according to gender.

## 4 RESULTS

This section presents the main finding of the research and is divided into several consecutive subsections. Firstly, descriptive statistical analysis is used to reveal the differences in mean answers between genders and faculties. Internal reliability tests of multiple answers associated with the key explanatory variables are also performed. Before the linear regression models are estimated, multivariate factor analysis is performed to re-express the set of variables in the form of a few common factors. Finally, linear regression analysis is used with entrepreneurial prediction as a dependent variable. The regression models are estimated separately for each faculty and by gender, assuming that the decision to choose an entrepreneurial career is gendered (see, for example, Andres and Adamuti-Trache 2008; Camelo-Ordaz et al. 2016; Cheraghi et al. 2019).

### 4.1 DESCRIPTIVE STATISTICAL ANALYSIS

Correlation analysis of the selected set of variables reveals that the dependent variable 'entrepreneurial intention of students' indicates strong positive correlations with attitudes towards entrepreneurship and perceived behavioural control variables (Table 2).

These associations are stronger among electrical engineering students. On the other hand, the variables of subjective norms and risk-taking propensity form a low but positive association with the dependent variable. Bearing in mind that the research included a small number of control variables (see Table 1), all of them were included in the analysis of entrepreneurial prediction. Although it was assumed that there is a correlation between the age of students and the year of study, the correlation analysis revealed that the estimated correlation coefficients show only a moderate correlation ( $r \leq 0.6$ ). The correlation is more pronounced between students under 21 years of age and the second year of study; however, this variable is the reference category for age. Considering that the sample is large ( $n > 30$ ) and that the age interval in the samples of economics (19 vs. 27) and electrical engineering (20 vs. 30) students is wide, both categorical variables were retained in the regression analysis. In addition, after estimating the regression models, appropriate statistical tests were performed to examine the presence of multicollinearity.

The differences in key explanatory factors chosen to explain the potential entrepreneurial behaviour of undergraduate students are presented in Table 3.

Regarding the attitudes towards entrepreneurship, perceived control of the process of creating an enterprise, and relevant others embodied in subjective norms, there are slight gender differences among the FE students. The only statistically significant difference is revealed in the subjective norm variable. However, when the students of FEE are observed, statistically significant differences are confirmed among attitudes towards entrepreneurship and perceived behavioural control factors. Since all

**Table 3.** Differences in key explanatory factors by gender and faculty

Question/item	Economics			Electrical engineering		
	Mean		Diff.	Mean		Diff.
	Male	Female		Male	Female	
<b>Attitude (scale 1–5)</b>						
Entrepreneurship implies more advantages than disadvantages	3.74	3.84	-0.11	3.75	3.59	0.15
Entrepreneurship is attractive as a career	3.67	3.63	0.03	3.46	3.08	0.38***
Opportunities and resources are required for starting a firm	4.10	3.99	0.11	4.03	3.65	0.38***
Being an entrepreneur entails great satisfaction	3.81	3.73	0.08	3.49	3.25	0.24*
<i>Cronbach's a</i>		0.89			0.91	
<b>Control (scale 1–5)</b>						
Know how to control the creation process of a firm	3.22	3.07	0.15	3.12	2.85	0.27**
Know the practical details to start a firm	2.57	2.64	-0.07	2.35	2.13	0.22*
Familiar with project development	2.76	2.74	0.02	2.49	2.22	0.28**
Expected to have a high probability of success	3.38	3.32	0.05	3.34	3.13	0.21*
<i>Cronbach's a</i>		0.79			0.81	
<b>Subjective norm (scale 1–5)</b>						
Family would approve of starting a firm	4.14	4.16	-0.02	4.20	4.14	0.06
Friends would approve of starting a firm	3.97	4.18	-0.21*	4.19	4.17	0.02
Colleagues would approve of starting a firm	3.76	3.99	-0.23*	4.06	3.95	0.11
<i>Cronbach's a</i>		0.86			0.84	

Note: (\*\*\*), (\*\*), (\*) stand for statistical significance at 1%, 5%, and 10% respectively. Two-tailed tests are performed.

Source: Self-administered survey.

values of *Cronbach's a* are greater than 0.7, the high internal reliability of explanatory variables is confirmed (Table 3).

Similarly, gender differences in the prediction of entrepreneurial behaviour are more pronounced among the students of FEE (Table 4). Differences between young male and female electrical engineering students are confirmed as statistically significant. In contrast, statistically significant gender differences among the students of FE are only confirmed for three items, expressing their potential determination, serious thought, and firm intention to start their own business sometime in the future (Table 4). The values of *Cronbach's a* point to the high internal consistency of

the students' answers for the entrepreneurial intention variable.

For the most part, students of the two faculties expressed differences in their attitudes toward entrepreneurship and the perception of control over establishing and running a business. Those differences are statistically confirmed (Table 5). The students of EF rated the attractiveness of the entrepreneurial profession and the potential satisfaction of that career choice with a higher score. This made the differences in their answers statistically significant. Students of the same faculty also believe they can easily master the practical details if they have the opportunity to engage in entrepreneurship and develop their own project.

**Table 4.** Differences in entrepreneurial prediction by gender and faculty

Question/item	Economics			Electrical engineering		
	Mean		Diff.	Mean		Diff.
	Male	Female		Male	Female	
<b>Entrepreneurial intention (scale 1–5)</b>						
Ready to do anything to be an entrepreneur	3.02	2.81	0.21	2.70	2.33	0.37***
Professional goal to become an entrepreneur	2.97	2.87	0.10	2.73	2.40	0.34**
Make an effort to start own firm	3.01	2.83	0.17	2.56	2.32	0.24*
Determined to create a firm in the future	3.19	2.94	0.25*	3.02	2.57	0.45***
Have serious thought of starting a firm	3.14	2.83	0.30*	2.94	2.42	0.52***
Have a solid intention to start a firm	3.26	2.92	0.35**	2.99	2.54	0.45***
<i>Cronbach's a</i>	0.95			0.96		

Note: (\*\*\*), (\*\*), (\*) stand for statistical significance at 1%, 5%, and 10% respectively. Two-tailed tests are performed.

Source: Self-administered survey.

Differences in students' sentiments about significant others who would support their plans were not identified as statistically significant. However, entrepreneurial orientation expressed through readiness to become entrepreneurs, professional goals, or an effort to start their own business was more pronounced among the students of EF, which distinguished them from electrical engineering students. Although the answers related to the relevance of social norms were assigned the highest marks, the students of the two faculties were similar in their answers. They would rely more on the support of family and friends than colleagues if they planned to start an entrepreneurial project.

In order to combine multiple answers, multivariate factor analysis was employed. Both measures performed to confirm the relevance of the factor analysis method for the data used show meaningful values (Table 6). All the factor models passed Bartlett's test for sphericity. At the same time, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy confirms that the factor analysis can be used as an initial method

for data calibration. The estimates of factor analysis models are produced by using the maximum likelihood (ML) method.

The values of the likelihood ratio (LR) test used for testing the independent against the saturated number of factors hypothesis in the factor analysis model are as follows: in the entrepreneurial intention model (which includes six variables), the LR result is 4,024.03 ( $p = 0.00$ ), while in the attitudes towards entrepreneurship model (four variables), the LR result is 1,766.07 ( $p = 0.00$ ). In the perceived behavioural control model (four variables), the relevant test result is 868.70 ( $p = 0.00$ ), in the subjective norm model (three variables) 884.58 ( $p = 0.00$ ), and in the risk-taking propensity model (three variables) 159.58 ( $p = 0.00$ ). The condition that at least three variables must be included in the factor analysis to extract one common factor is satisfied. Based on the results of performed statistical tests, one common factor is retained per model. Variables used in the regression analysis are formed as a combination of related items assuming equal weights.

**Table 5.** Differences in key explanatory factors between faculties

Question/item	Economics	Electrical engineering	Diff.
	Mean		
<b>Attitude (scale 1–5)</b>			
Entrepreneurship implies more advantages than disadvantageous	3.82	3.69	0.15*
Entrepreneurship is attractive as a career	3.64	3.32	0.32***
Opportunities and resources are required for starting a firm	4.02	3.88	0.13
Being an entrepreneur entails great satisfaction	3.74	3.41	0.34***
<i>Cronbach's a</i>		0.90	
<b>Control (scale 1–5)</b>			
Know how to control the creation process of a firm	3.10	3.01	0.08
Know the practical details to start a firm	2.63	2.27	0.36***
Familiar with project development	2.74	2.39	0.35***
Expected to have a high probability of success	3.34	3.27	0.07
<i>Cronbach's a</i>		0.80	
<b>Subjective norm (scale 1–5)</b>			
Family would approve of starting a firm	4.15	4.18	-0.03
Friends would approve of starting a firm	4.13	4.18	-0.05
Colleagues would approve of starting a firm	3.94	4.02	-0.08
<i>Cronbach's a</i>		0.85	
<b>Entrepreneurial intention (scale 1–5)</b>			
Ready to do anything to be an entrepreneur	2.86	2.57	0.29***
Professional goal to become an entrepreneur	2.89	2.61	0.28***
Make an effort to start own firm	2.88	2.47	0.40***
Determined to create a firm in the future	3.00	2.86	0.14
Have serious thought of starting a firm	2.91	2.76	0.15
Have a solid intention to start a firm	2.99	2.83	0.17*
<i>Cronbach's a</i>		0.95	

Note: (\*\*\*), (\*\*), (\*) stand for statistical significance at 1%, 5%, and 10% respectively. Two-tailed tests are performed.

Source: Self-administered survey.

## 4.2 LINEAR REGRESSION ANALYSIS

Linear regression models are estimated separately at the level of each faculty, on a whole sample, and subsamples of male and female students. The results of the estimation are presented in Table 7. The effects of four explanatory variables on the entrepreneurial intention variable are estimated. In addition, four control variables are included in regression models. They represent third- and fourth-

year students (first- and second-year students were excluded), as well as the age categories of 22–23 and 24 years and over (while those 21 and younger were excluded). A dichotomous variable that represents female students was added to the models estimated on a combined sample.

The standardised beta coefficients are presented for a more straightforward interpretation of regression coefficients expressed on different meas-

**Table 6.** Tests performed before the factor analysis

Test	H <sub>0</sub>	Entrepreneurial intention	Attitude	Control	Subjective norm	Risk
Bartlett's test for sphericity	No intercorrelation between items	4,017.463 (0.00)	1,763.195 (0.00)	867.283 (0.00)	883.138 (0.00)	159.317 (0.00)
KMO measure of sampling adequacy	> 0.50	0.924	0.815	0.725	0.676	0.567

Source: Self-administered survey.

urement scales (see Tables 7 and 8). Dependent and independent variables are defined in average values from a five-point Likert scale, while control (dichotomous) variables are expressed on a scale from 0 to 1 as dummies.

The regression model estimates indicate that entrepreneurial prediction is positively and statistically significantly associated with attitudes towards entrepreneurship and perceived behavioural control factors, while subjective norms and risk-taking propensity are not estimated with high statistical precision. Similar results are obtained for all estimated regression models (Table 7). The risk-willingness variable is an important predictor of future behaviour, but it is not statistically significant in estimated regression models. The importance of this variable relies on the different perceptions of men and women regarding opportunities and constraints over their life course (Elder 1994). This variable is measured through three questions: propensity to use new routes, propensity to try new things, and finding out whether students have recently taken any risks. As expected, male students were more prone to risky behaviour in the previous period. However, the only statistically significant difference between male and female students was found in the variable describing their risk-taking propensity over the previous six months.

Bearing in mind the limitation of the sample to the student population, this

paper focuses mainly on the explanation of the first anticipatory stage of the life course that, according to age studies, encompasses those aged 18–29 years (Becker and Moen 1999). A set of control variables is included in the regression models, but they do not form statistically significant relationships with the entrepreneurial prediction variable. More precisely, only the answers from students aged 24 years and older are positively and statistically significantly associated with predicting future entrepreneurial behaviour. In the same way, gender plays an essential role in the entrepreneurial orientation of students (Camelo-Ordaz et al. 2016; Zisser et al. 2019). An estimate of the female dummy variable suggests that women are less interested in entrepreneurial career planning. However, this variable is a statistically significant predictor of future entrepreneurial behaviour only for the students of FE. In order to determine whether there are gender differences in the structure of estimated entrepreneurial prediction models, the Chow test was conducted. The results confirm that only statistically significant differences exist in the answers of male and female students of FE, while the students of FEE do not differ in their views regarding the predictors of entrepreneurial behaviour.

The measures of model fit, adjusted R-squared and F-statistics exhibit reliable and statistically significant values. The mean values of the variance inflation

**Table 7.** Regression analyses by faculty and gender (dependent variable entrepreneurial prediction)

Variable	Economics			Electrical engineering		
	All	Male	Female	All	Male	Female
	Standardised $\beta$ (std. err.)					
Attitude	0.57*** (0,04)	0.43*** (0.10)	0.60*** (0.05)	0.56*** (0.04)	0.59*** (0.06)	0.47*** (0.07)
Control	0.30*** (0,05)	0.46*** (0.10)	0.26*** (0.05)	0.34*** (0.04)	0.34*** (0.06)	0.38*** (0.08)
Subjective norm	-0.01 (0.04)	-0.11 (0.09)	0.02 (0.04)	-0.01 (0.05)	-0.03 (0.06)	0.03 (0.06)
Risk	0.002 (0.04)	0.02 (0.09)	0.01 (0.05)	0.01 (0.04)	-0.01 (0.05)	0.04 (0.06)
Age						
Age 18–21 (ref.)						
Age 22–23	-0.02 (0.06)	-0.09 (0.12)	-0.003 (0.06)	0.02 (0.06)	0.05 (0.07)	-0.06 (0.10)
Age 24+	0.07* (0.04)	0.09 (0.08)	0.06 (0.04)	0.02 (0.04)	0.06 (0.05)	-0.01 (0.06)
Year of study						
1 <sup>st</sup> and 2 <sup>nd</sup> (ref.)						
3 <sup>rd</sup> year of study	-0.02 (0.06)	0.03 (0.12)	-0.05 (0.06)	0.08 (0.07)	0.11 (0.08)	0.03 (0.10)
4 <sup>th</sup> year of study	0.04 (0.06)	0.14 (0.11)	0.004 (0.07)	0.10 (0.08)	0.10 (0.11)	0.11 (0.13)
Gender						
Female	-0,07** (0.04)			-0.05 (0.04)		
Observations	309	72	237	307	196	111
Adj. $R^2$	0.586	0.632	0.582	0.648	0.655	0.618
F-statistic ( $p$ -value)	57.44 (0.00)	25.40 (0.00)	49.31 (0.00)	76.89 (0.00)	51.47 (0.00)	27.79 (0.00)
Mean VIF	1.54	1.75	1.61	2.19	2.41	2.31
Chow test ( $p$ -value)		1.78 (0.07)			0.60 (0.79)	

Note: (\*\*\*), (\*\*), (\*) stand for statistical significance at 1%, 5%, and 10% respectively. Two-tailed tests are performed.

Source: Self-administered survey.

factor (VIF) are far below the standard threshold of 10, indicating the absence of multicollinearity among the variables included in the regression models. In the regression models estimated on a subsample of EF students, the VIF values range from 1.54 to 1.75, while the same regressions estimated on a subsample of FEE students produce VIF values ranging from 2.19 to 2.41.

Attitudes towards entrepreneurship and perceived behavioural control are good predictors of entrepreneurial behaviour, while subjective norms and risk-taking propensity have little power to predict future behaviour (Table 8). The regression models with the latter two explanatory variables produced the lowest adjusted R-square statistics. These results are derived from the regressions,

**Table 8.** Repeated regression analysis (dependent variable entrepreneurial prediction)

Variable	(1) Standard- ised $\beta$ (std. err.)	(2) Standard- ised $\beta$ (std. err.)	(3) Standard- ised $\beta$ (std. err.)	(4) Standard- ised $\beta$ (std. err.)	(5) Standard- ised $\beta$ (std. err.)	(6) Standard- ised $\beta$ (std. err.)	(7) Standard- ised $\beta$ (std. err.)
Attitude	0.71*** (0.03)				0.70*** (0.03)		
Control		0.59*** (0.03)				0.58*** (0.04)	
Subjective norm			0.27*** (0.03)				0.25*** (0.04)
Risk				0.18*** (0.04)	0.06** (0.03)	0.04 (0.04)	0.15*** (0.04)
Age							
Age < 24 (ref.)							
Age 24+	0.08*** (0.02)	0.04 (0.04)	0.10** (0.04)	0.10** (0.04)	0.08*** (0.02)	0.04 (0.04)	0.10** (0.04)
Year of study							
1 <sup>st</sup> to 3 <sup>rd</sup> (ref.)							
4 <sup>th</sup> year of study	0.05* (0.02)	0.05 (0.04)	0.05 (0.04)	0.06 (0.05)	0.05* (0.02)	0.05 (0.04)	0.05 (0.04)
Gender							
Female	-0.08*** (0.03)	-0.09*** (0.03)	-0.15*** (0.04)	-0.13*** (0.04)	-0.08** (0.03)	-0.09*** (0.03)	-0.14*** (0.04)
Faculty							
Electrical engineering (ref.)							
Economics	0.08** (0.05)	0.09** (0.04)	0.20*** (0.04)	0.18*** (0.04)	0.08** (0.03)	0.09** (0.04)	0.19*** (0.04)
Observations	616	616	616	616	616	616	616
Adj. $R^2$	0.542	0.380	0.120	0.080	0.545	0.381	0.143
F-statistic ( $p$ -value)	169.55 (0.00)	74.10 (0.00)	19.21 (0.00)	11.55 (0.00)	141.88 (0.00)	62.00 (0.00)	18.49 (0.00)
Mean VIF	1.15	1.16	1.14	1.14	1.14	1.16	1.12

Note: (\*\*\*), (\*\*), (\*) stand for statistical significance at 1%, 5%, and 10% respectively. Two-tailed tests are performed.

Source: Self-administered survey.

which include single explanatory variables combined with the effects of control variables. Model fit increased slightly in the models where the three theoretical variables of planned behaviour are combined with a risk-willingness variable. Table 8 depicts the results of the estimation of the seven regression models.

Students aged 24 years and over have a positive and statistically significant

perception of becoming entrepreneurs in the future. A similar relationship with the dependent variable forms a dummy variable that refers to students in their final year of study. From the perspective of planning, fourth-year students are the closest to deciding to choose an entrepreneurial career after transitioning from school to work. Female students form a statistically significant

but negative relationship with entrepreneurial intention. Entrepreneurial intention also differs by faculty. Students of economics are more inclined to start a firm than students of electrical engineering. Regression models' goodness-of-fit statistics provide information about the prediction power of independent variables and the overall significance of regressors. The values of these statistics vary through the estimated regression models and indicate that the regression analysis is meaningful. Also, low values of the VIF measure (ranging from 1.12 to 1.16) signify that there is no multicollinearity in the regression models.

## 5 DISCUSSION

Four main hypotheses are tested by employing the regression analysis. The first hypothesis assumes positive associations between theoretical variables of planned behaviour and entrepreneurial intentions. When estimating individual regressions on combined samples at the level of each faculty separately, as well as according to gender, only attitudes and perceived behavioural control factors form a statistically significant causal relationship with entrepreneurial intention. In the sample of female students of the EF, attitudes towards entrepreneurship significantly affect entrepreneurial intentions. In the case of the EEF, it is male students who are more prone to becoming entrepreneurs in the anticipatory phase of their life course. The increase in one standard deviation in EF female students' attitudes towards entrepreneurship raises their entrepreneurial intentions by 0.60 standard deviations. Similarly, the effect of attitudes on FEE male students' entrepreneurial intentions is an increase of 0.59 standard deviations.

The effects of perceived behavioural control factors are lower among the students of both faculties than the impact of the attitudes. This variable increases the entrepreneurial intentions of FE male students by 0.46 standard deviations, almost twice as much as in the sample of female students. The differences in the estimated effects are lower in the sample of male (0.34 standard deviations) and female (0.38 standard deviations) FEE students. The variables of behavioural control and subjective norm perceptions do not have (significant) explanatory power in the entrepreneurial intention models. However, when individual regressions were estimated on a combined sample, all three explanatory variables had the theoretically expected positive and statistically significant influence on students' entrepreneurial intentions, confirming the first hypothesis.

Rajh et al. (2018) found similar results for students of economics in Serbia. Significant others are important drivers of entrepreneurial intentions, but only for students in Bosnia and Herzegovina and Croatia. Using the same data, Ognjenović (2022) found that subjective norms are positively and statistically significantly correlated with the entrepreneurial intention variable. International comparisons also match the findings for Serbia. On a sample of Slovenian business students, Pejić Bach et al. (2018) confirmed empirical associations between planned behaviour theoretical variables and entrepreneurial intentions, while also pointing to the importance of innovative cognitive styles for the success of business ventures. Shen et al. (2017) found that the perceived family support variable positively and statistically significantly affects the entrepreneurial intention of undergraduate students in the USA.

van Gelderen et al. (2008) investigated the impact of variables derived from the theory of planned behaviour on the entrepreneurial intentions of Dutch business students. However, when planning their entrepreneurial career, students are most concerned about the possibility of falling into financial difficulties and financial uncertainty. Law and Breznik (2017) found attitudes and self-efficacy to be critical factors that positively determine the entrepreneurial intention of engineering students in Hong Kong.

Risk-taking propensity statistically significantly positively correlates with students' entrepreneurial intentions in the regression models that estimating individual effects (allowing for control variables). This implies that the second research hypothesis is empirically confirmed. In general, when the effects of individual predictors of entrepreneurial intentions were estimated on repeated regressions, the precision of coefficients significantly increased ( $p < 0.05$ ). Both remaining research hypotheses were statistically confirmed, the first referring to gender-based differences in the entrepreneurial intentions of students and the second indicating differences between students of the two faculties.

Being an FE student aged 24 years or older increases entrepreneurial intent by barely 0.07 standard deviations, while being a female student at the same faculty decreases entrepreneurial intent by the same degree. Examining entrepreneurial intentions among tourism students in Serbia, Jovičić Vuković et al. (2020) concluded that gender, year of study, and previous experience significantly determine their entrepreneurial intentions. Specific skills and knowledge may also increase students' entrepreneurial aspirations (Simović 2020). It is well established in empirical

studies that entrepreneurial intentions are gendered. Young women are more risk-averse because the anticipatory phase of their life course transitions is determined by family formation plans that include marriage and the decision to have children (Mooyaart et al. 2022). Men and women do not perceive opportunities and constraints equally, implying gender differences in risk-taking tendencies. Empirical research has found that men are less risk-averse than women on average (Camelo-Ordaz et al. 2016). However, some deviations may occur depending on the life course transition phase and the level of gender equality in society, which is reflected in the changing shares of male and female participation in entrepreneurship in the later stages of their lives (Cheraghi et al. 2019).

## 6 CONCLUSION

In this paper, only the prediction of the business path of undergraduate students in Serbia is studied in the context of realising future goals connected to becoming an entrepreneur. Related aspects of their lives and the transition to adulthood, such as family planning and parenthood, leaving the parental home and housing, work path, and pursuing further education embodied in life course theory are exempt from this analysis due to data limitations. In addition, this paper focuses only on the initial anticipatory phase of the life course (Elder 1994; Becker and Moen 1999), while other stages of the life course (Mitchell 2003) are beyond the scope of this analysis and require further research.

The research model is built using the variables taken from the planned behaviour theory (Ajzen 1991), examining the answers of young adults (students)

associated with their perceptions of the possible development of their entrepreneurial career. The variables that reflect positive attitudes towards entrepreneurship, significant others embodied in subjective norms, behavioural control perceptions, and risk-taking propensity are examined through associations with the entrepreneurial intention variable. The primary research hypotheses are empirically investigated based on these theoretical relationships. The age of students, year of study, gender, and faculty were also included in the research model through the control variables. The findings of the conducted research confirmed empirically the significance of the relationships between the immediate predecessors of planned behaviour and the entrepreneurial intentions of students in Serbia. However, as hypothesized, these relationships differ by gender and faculty (economics vs. electrical engineering). This research model can be used for the prediction of the business

path of young adults, providing relevant conclusions for the initial stage of life course transitions and promotion of entrepreneurship.

Positive attitudes towards entrepreneurship, the significant others and role models of entrepreneurs, as well as behavioural control perceptions have all been found to be potentially significant contributors to becoming an entrepreneur (van Gelderen et al. 2008; Liñán and Fayolle 2015; Shinnar et al. 2018; Laguía et al. 2019). The willingness to take risks embodied in the recognition of opportunities and limitations may be perceived differently by men and women (Cheraghi et al. 2019). Besides, it is empirically confirmed that men are more willing to take risks than women (Camelo-Ordaz et al. 2016). However, it is possible to find studies that show that male participation in entrepreneurship decreases in societies with low gender equity, especially in the launching phase of the life course (Cheraghi et al. 2019).

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# Planirano ponašanje i rodne razlike u stavovima prema preduzetništvu među studentima poslovne ekonomije i elektrotehnike

## PROŠIRENI APSTRAKT

Ovaj rad se bavi izučavanjem preduzetničkih namera među studentima ekonomije i elektrotehnike na Univerzitetu u Beogradu, u teorijskom okviru koji objašnjava tranzicije u okviru životnog toka. Nakon upisa fakulteta, afinitet prema preduzetništvu može da se smatra jednom od tranzicija u njihovom životu, najmanje iz perspektive planiranja radne putanje. Model preduzetničkih namera je konstruisan na temeljima teorije planiranog ponašanja, posmatrajući uzročnu povezanost između namere studenata da postanu preduzetnici i njihovih stavova o preduzetništvu, subjektivnih normi i percepcije o kontroli procesa koji vode ka preduzetništvu. Pri tome, subjektivne norme su otelovljene u razumevanju značajnosti drugih koji bi ih podržali u preduzetničkom poduhvatu, dok percipirana kontrola ponašanja reflektuje njihovo poimanje o tome koliko će budući događaji vezani za taj poduhvat bili pod njihovom kontrolom. Poseban naglasak je stavljen na varijablu koja meri sklonost ka preuzimanju rizika, imajući u vidu da muškarci i žene ne percipiraju mogućnosti i ograničenja na isti način. Informacionu osnovu za ovu analizu čine podaci ankete koja je sprovedena među studentima ova dva fakulteta. U fokusu su dve osnovne istraživačke hipoteze. Prva, koja polazi od rodnih razlika, u smislu sklonosti ka riziku i budućem izboru karijere preduzetnika, bazira se samo na anticipatornoj fazi životnog toka. Druga hipoteza polazi od pretpostavke da se preduzetničke namere studenata ova dva fakulteta razlikuju. Modeli preduzetničkih namera ocenjeni su u formi linearnih regresionih modela koji su izvedeni nakon inicijalno sprovedene multivarijacione statističke analize. Inicijalnom regresionom analizom je utvrđena samo statistički značajna veza između preduzetničkih namera i sklonosti ka preduzetništvu, te spoznaje o kontroli ponašanja. U cilju boljeg razumevanja početne faze životnog toka kod studenata, ocenjene su dodatne regresije na bazi kojih je ispitivan uticaj pojedinačnih nezavisnih varijabli na preduzetničke namere. Ocene regresora su statistički značajne, ukazujući na to da je predikcija preduzetničkog ponašanja uslovljena rodnim razlikama, kao i da zavisi od fakulteta. Osim toga, ovaj rad je namenjen i donosiocima odluka, budući da izlaže detaljnu analizu karakteristika budućih preduzetnika, kao i njihovo razumevanje procesa pokretanja poslovnih poduhvata.

## KLJUČNE REČI

rod, planirano ponašanje, preduzetničke namere, studenti, životni tok