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# DETERMINANTS OF ENTREPRENEURIAL ALERTNESS: THE EFFECT OF DEMOGRAPHIC AND METACOGNITIVE VARIABLES

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***ABSTRACT***

*Entrepreneurial alertness is a concept that merges two separate fields of research – cognition theory and the theory of entrepreneurial opportunity creation and discovery. Initially, entrepreneurial alertness was defined as an individual's ability to identify opportunities and recognize gaps with limited clues. The seminal work in entrepreneurial alertness was expanded later on with the notion of action and proactive stance as fundamental components of entrepreneurial behavior. Finally, researchers were able to parcel it into three distinct elements of alertness: scanning and search, association and connection, and evaluation and judgment. This study builds upon previous research by identifying determinants of entrepreneurial alertness. The purpose of the study is to explore the role of demographic variables (gender, education level, education focus, prior work experience, and having parents as entrepreneurial role models), as well as metacognitive knowledge and metacognitive experience as most frequently used measures of entrepreneurial metacognition. To observe these relations, a sample of 84 business students majoring in 6 different areas (marketing, finance, management, entrepreneurship, trade and logistics, and business informatics) was analyzed using linear regression as the primary method of empirical analysis. The results demonstrate a strong positive relationship between entrepreneurial alertness and metacognitive knowledge and*

*experience. Furthermore, prior work experience, year of the study program, and academic major play an important role in determining entrepreneurial alertness. Overall, the model explains 38.6% of the variance in the response variable.*

***Keywords**: entrepreneurial opportunity; metacognitive knowledge; metacognitive experience*

## 1. INTRODUCTION

Entrepreneurship has been recognized as one of the main drivers of value creation, competitiveness, innovation, and economic prosperity. Policies and programs aimed at boosting entrepreneurial activity on a local and national level have been implemented in the majority of countries worldwide. From the research and academic perspective, scholars are still looking for ways to increase our understanding of factors that influence entrepreneurial behavior on personal, organizational, and national levels. This paper investigates entrepreneurial alertness, a concept very close to entrepreneurial intention, which is a notion that many entrepreneurship scholars have focused on. Previous research has designated intentions as the most proximate predictor of a certain behavior (Armitage and Conner, 2001), and the theory of planned behavior (Ajzen, 1991) seems to be the most widely used theoretical framework for investigating intentions. However, there are several reasons why focusing solely on entrepreneurial intention may result in disregarding some important dimensions of entrepreneurial behavior. First, the entrepreneurial intention is in most cases defined as the perceived likelihood that a person will start their own company at some point in life. Contemporary entrepreneurship literature recognizes that starting and managing a company is only one manifestation of entrepreneurial behavior. Second, scholars tend to use quite different measurement constructs for entrepreneurial intention. The variable can be operationalized on a spectrum from a single yes/no question to multi-item constructs. This limits the comparability of the study and hinders the development of the field. Finally, we know the least about what happens in-between intention formation and actual behavior. Therefore, scholars have proposed some other constructs that assess the thought process of opportunity exploration and exploitation. Entrepreneurial alertness is a multidimensional construct that reflects perceptual and cognitive processes of an individual who is contemplating future situations with the aim of creating value.

This study observes entrepreneurial alertness in the context of graduate business students. The research question relates to the identification of entrepreneurial alertness determinants. The goal is to determine the relationship between entrepreneurial alertness and a preselected set of possible predictors – demographic variables, metacognitive knowledge, and metacognitive experience. In that sense, the paper contributes to the overall body of literature on entrepreneurial alertness with a special focus on exploring predictors of entrepreneurial alertness among prospective entrepreneurs.

## 2. PREVIOUS RESEARCH ON ENTERPRENEURIAL ALERTNESS

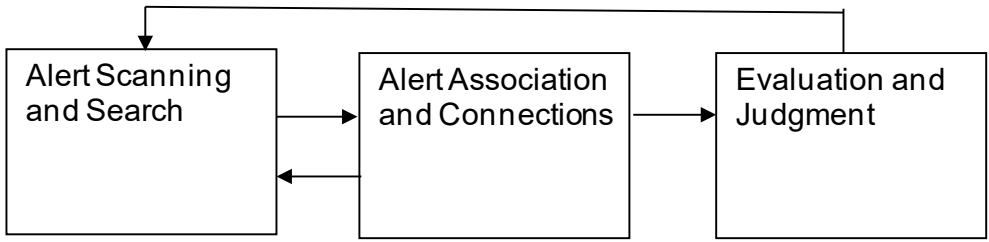
Discovering, exploring and exploiting entrepreneurial opportunities is an essential part of the entrepreneurial process. Entrepreneurial opportunities are situations in which individuals employ their creativity while contemplating certain outcomes that can be achieved by implementing particular methods and actions. This process involves close interaction of three dimensions – accumulated knowledge, cognitive structures, and behavioral factors – all of which are reflected in the construct of

entrepreneurial alertness (Li, 2012). In that sense, entrepreneurial alertness refers to the ability some people have to notice opportunities that have been overlooked by others. While this definition has been widely used in both academic and research literature, there are several other perspectives that highlight various aspects of entrepreneurial alertness. All of these definitions are closely related to the phenomenon of entrepreneurial opportunities and the way they emerge.

Kirzner (1979, 1985) was the first one to coin the notion of entrepreneurial alertness to highlight the uniqueness of entrepreneurs as the ones with a distinctive set of perceptual and cognitive processing skills, which enables them to notice an opportunity. In one of his papers, Kirtzner (1997) argues that opportunity, by definition, implies that something is unknown until discovered and therefore cannot be searched for. As stated in his study, the element of surprise accompanies the process of opportunity discovery, and entrepreneurial alertness is regarded as notice without search. Other authors followed this focus on the means that entrepreneurs employ in the process of opportunity identification. According to the rational information search model, people who have superior information position (determined by prior knowledge, information processing ability, search techniques, scanning behavior, or network position) will be more likely to discover opportunities. In that sense, Kaish and Gilad (1991) interpreted the notion of entrepreneurial alertness as having an aptitude to position oneself in the flow of information, so as to maximize the chance of encountering an opportunity without actively searching for it. Cooper et al. (1995) subsequently confirmed the results of their study. Later on, scholars have suggested that research on entrepreneurial alertness should start examining this construct as a motivated propensity by looking at how entrepreneurs behave in the marketplace, as well as their perceptions and interpretations of the marketplace. The psychological approach introduced a concept of a mental schema that describes entrepreneurial alertness as a set of cognitive properties and psychological processes (Gaglio and Katz, 2001). Rational models within the psychological approach aim to understand the specifics of those cognitive and perceptual processes, as well as ways in which knowledge stored in a mental schema can be used in opportunity identification. More recently, McMullen and Shepherd (2006) noted that alertness is entrepreneurial only if it comprises of judgment and action.

Building upon previous studies, primarily Kirzner's work and McMullen and Shepherd's (2006) advancements in behavioral aspects of alertness, Tang et al. (2012) developed a new, three-dimensional model of entrepreneurial alertness as shown in Figure 1.

**Figure 1: Model of entrepreneurial alertness**




Source: Tang, Kacmar and Busenitz, 2012, page 80.

The first dimension includes alert scanning and search and it implies a wide range of information sources that entrepreneurs use to build their knowledge base. It relates to the process of generating both tacit and explicit knowledge. By expanding their knowledge base, entrepreneurs are simultaneously developing their cognitive frameworks (i.e., an idiosyncratic accumulation of experience, knowledge, and beliefs about a specific domain). The second dimension involves alert association and connection. This is a creative process of contemplating various options and making connections to the big picture. It involves an intentional change of existing knowledge frameworks as a response to new information or a different interpretation of current information. Throughout this process, an individual may want to go back to the scanning and search phase and look for additional pieces of the picture that will add to the clarity of the big picture and even result in new associations and schemas. Hence, the circular relationship between the first and the second dimension. Finally, the third dimension incorporates evaluation and judgment. This two-stage process starts with an assessment of the situation, which may turn out to be an opportunity that is out there for everyone with the right combination of knowledge and skills to exploit it. It continues with evaluation of the opportunity in the context of entrepreneur's personal resources (such as knowledge, skills, experience, network, motivation, etc.) to determine if this opportunity is the right for him or her. This last dimension of entrepreneurial alertness will result in a specific set of actions if an entrepreneur believes he or she has what it takes to seize the opportunity.

## 3. METHODOLOGY

The sample frame was composed of students enrolled in the third year of undergraduate study, as well as first-year and second-year graduate students at the Faculty of Economics in Osijek. Both undergraduate and graduate program offer six different academic majors: financial management, marketing, general management, trade and logistics, entrepreneurship, and business informatics. Similar to this study, Tang et al. (2012) selected students to be participants in the study aimed at developing a measurement instrument for entrepreneurial alertness.

Data was collected using self-report written questionnaires that were distributed at a pre-selected date and time to students who voluntarily decided to show up and participate in the research. On average, the participants were 21.8 years old (median was 21, a standard deviation of 1.6) and 72.6% of them were female. While a larger portion of the sample reported to have thought about starting their own company by themselves or with a partner (63 students or 75% of the sample), only three respondents have actually started their own company and gained first-hand entrepreneurial experience. Additional information about the sample is provided in Table 1.

**Table 1: Sample description**

| | n | % | | | n | % |
|---|---|---|---|---|---|---|
| *Gender* | | | | *Academic major* | | |
| Male | 23 | 27.4 | | Financial management | 23 | 27.4 |
| Female | 61 | 72.6 | | Marketing | 18 | 21.4 |
| *Year of study* | | | | Management | 8 | 9.5 |
| 3rd year of the undergraduate program | 54 | 64.3 | | Entrepreneurship | 26 | 31.0 |
| 1st year of the graduate program | 23 | 27.4 | | Business informatics | 7 | 8.3 |
| 2nd year of the graduate program | 7 | 8.3 | | Trade and logistics | 2 | 2.4 |
| *Entrepreneurial intention* | | | | *Parents as entrepreneurs* | | |
| Yes | 63 | 75.0 | | Yes | 37 | 44.0 |
| No | 21 | 25.0 | | No | 47 | 56.0 |

Source: Authors' analysis

Entrepreneurial alertness, defined as a dependent variable, is comprised of three dimensions: scanning and search (Cronbach's Alpha = 0.799), association and connection (Cronbach's Alpha = 0.850), and evaluation and judgement (Cronbach's Alpha = 0.797). It was measured using a scale adapted from Tang et al. (2012) on a seven-point Likert-type scale (Table 2) and the final score represents the average of scores on the items (where a higher average score indicates a higher level of entrepreneurial alertness).

**Table 2: Measurement construct for entrepreneurial alertness**

| Item |
|---|
| *Scanning and search* (Cronbach's Alpha = 0.799) |
| 1. I have frequent interactions with others to acquire new information. |
| 2. I always keep an eye out for new business ideas when looking for information. |
| 3. I read news, magazines, or trade publications regularly to acquire new information. |
| 4. I browse the Internet every day. |
| 5. I am an avid information seeker. |
| 6. I am always actively looking for new information. |
| *Association and connection* (Cronbach's Alpha = 0.850) |
| 7. I see links between seemingly unrelated pieces of information. |
| 8. I am good at "connecting dots". |
| 9. I often see connections between previously unconnected domains of information. |
| *Evaluation and judgment* (Cronbach's Alpha = 0.797) |
| 10. I have a gut feeling for potential opportunities. |
| 11. I can distinguish between profitable opportunities and not-so-profitable opportunities. |
| 12. I have a knack for telling high-value opportunities apart from low-value opportunities. |
| 13. When facing multiple opportunities, I am able to select the good ones. |

Source: adapted from Tang, Kacmar and Busenitz, 2012

Dependent variables included gender, year of study, academic major, work experience, having parents as entrepreneurial role models, metacognitive knowledge, and metacognitive experience. Demographic variables were selected as prospective determinants based on previous research on entrepreneurial intentions and entrepreneurial alertness.

Metacognitive knowledge and metacognitive experience were measured using scales taken from Haynie and Shepard (2009) with a five-point Likert-type question format. The final score for each of the measurement constructs is the average of the scores on the items included in the construct.

## 4. RESULTS

The results of correlation analysis confirmed the following statistically significant relationships (Table 3). First, there is a statistically significant positive relationship between entrepreneurial alertness and metacognitive knowledge, as well as between entrepreneurial alertness and metacognitive experience. Both correlation coefficients indicate moderate strength of the relationship. Second, there is a statistically significant negative relationship between entrepreneurial alertness and entrepreneurial intention. In line with that, there are also statistically significant

negative relationships between entrepreneurial intention and two metacognitive variables – knowledge and experience. Finally, metacognitive knowledge and metacognitive experience are also positively correlated.

**Table 3: Correlation matrix**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| (1) Entrepreneurial alertness | 1 | -.045 | -.177 | -.130 | .011 | .508** | .423** | -.106 | -.409** |
| (2) Gender | | 1 | .005 | .108 | -.007 | -.011 | .000 | -.164 | .046 |
| (3) Year of study | | | 1 | .000 | -.101 | .097 | -.158 | -.014 | .118 |
| (4) Work experience | | | | 1 | .001 | .103 | .022 | .024 | .045 |
| (5) Parents as entrepreneurs | | | | | 1 | .122 | .114 | -.065 | .014 |
| (6) Metacognitive experience | | | | | | 1 | .419** | -.097 | -.290** |
| (7) Metacognitive knowledge | | | | | | | 1 | -.197 | -.309** |
| (8) Academic major | | | | | | | | 1 | -.028 |
| (9) Entrepreneurial intention | | | | | | | | | 1 |
| * Correlation is significant at the 0.05 level | | | | | | | | | |
| ** Correlation is significant at the 0.01 level | | | | | | | | | |

Source: Authors' analysis

Since there are no two independent variables with a bivariate correlation higher than 0.7, all variables are retained. Additionally, the possibility of multicollinearity is not an issue according to VIF (<1.319) and tolerance indicator (>.758). As shown in Table 4, the model explains 38.6% of the variance in entrepreneurial alertness. Table 5 displays the variables that contributed to the prediction of the dependent variable.

**Table 4: Model summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| | .622 | .386 | .330 | .66730 |

Source: Authors' analysis

**Table 5: Regression coefficients**

| Model | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 1.039 | 1.031 | | 1.008 | .317 |
| Academic major | -.016 | .052 | -.029 | -.308 | .759 |
| Work experience | -.317 | .161 | -.179 | -1.967 | .053 |
| Year of study | -.252 | .117 | -.200 | -2.148 | .035 |
| Gender | -.045 | .167 | -.025 | -.271 | .787 |
| Parents as entrepreneurs | -.149 | .149 | -.091 | -1.001 | .320 |
| Metacognitive experience | .903 | .196 | .469 | 4.607 | .000 |
| Metacognitive knowledge | .428 | .217 | .204 | 1.975 | .052 |

Source: Authors' analysis

To analyze the contribution of each independent variable, the values of standardized coefficients should be compared. Metacognitive experience stands out as the most prominent predictor of entrepreneurial alertness. In other words, metacognitive experience makes the strongest unique contribution to explaining entrepreneurial alertness. The next predictor variable is the year of study, which affects alertness in a way that students enrolled in later years of formal education exhibit higher levels of entrepreneurial alertness. All other independent variables do not make any statistically significant unique contribution to the prediction of entrepreneurial alertness.

## 5. DISCUSSION AND IMPLICATIONS FOR FUTHER RESEARCH

The aim of this paper was to examine the relationship between entrepreneurial alertness and prospective predictors. Independent variables were selected as suggested in the previous studies. Since the notion of entrepreneurial alertness is very close to the entrepreneurial intention, demographic variables were chosen based on their relationship with entrepreneurial intention. Additionally, metacognitive knowledge and metacognitive experience were expected to be positively related to alertness, since boosting one's awareness about their own cognitive processes and acting upon that awareness, can result in enhancing one's alertness. By definition, metacognitive knowledge involves knowledge about cognition in general, but also includes knowledge and awareness about one's own cognition (Pintrich, 2002). Expansion of metacognitive knowledge enables an individual to be aware and critical about his or her learning process and to regulate that process if the outcome is not satisfactory. This leads to metacognitive experience, which represents feelings,

estimates and judgements related to the features of the learning task, cognitive processes, and the final outcome (Efklides, 2009).

Metacognition is often regarded as cognition of cognition (Flavell, 1979). It is a representation of cognition and it can influence behavior only indirectly through cognition. If regarded as a model of cognition, metacognition can support certain behavior only to the extent the model is accurate. This indicates that trajectory from metacognitive knowledge and experience to the development of specific behavior is not always straightforward.

The results of this study confirmed the predictive power of metacognitive experience in relation to entrepreneurial alertness. The main implication of this finding is that entrepreneurial alertness can be increased by focusing on the development of metacognitive experience. One way to do this is through formal education, starting as early as elementary school. Besides, study programs at university level are particularly suitable for introducing new and innovative forms of metacognitive teaching strategies. Moreover, in line with entrepreneurial behavior being desirable in all aspects of social and professional life (not just in the context of starting a business), entrepreneurial alertness can (and perhaps should) be set as an outcome of non-entrepreneurship study programs. The possibility of influencing alertness is also confirmed by the second finding of this study that indicates predictive power of the year of study toward entrepreneurial alertness. The higher the study year, the higher the level of entrepreneurial alertness among students. In other words, the more students are exposed to various forms of teaching and cognition processes, as well as to opportunities to interact with different people and expand their networks, the more alert they will be.

Finally, the last main finding of this research is conceptually conflicting and not aligned with the results of several previous studies on entrepreneurial intentions. The results indicated a negative correlation between entrepreneurial intention and entrepreneurial alertness. One explanation might be the operationalization of the intention variable. In this study, the intention relates solely to the notion of starting a business. While entrepreneurial alertness can lead to this type of entrepreneurial behavior, this may not always be the case. This explanation is supported by the fact that there is no relationship between academic major and entrepreneurial alertness. Particularly, regardless of the field of study (entrepreneurship or non-entrepreneurship), students' alertness is not influenced by classroom topics, but by other factors that are not topic-related.

Overall, this study contributes to the understanding of the factors that influence entrepreneurial alertness and offers suggestions to educators and educational institutions about teaching strategies that may increase students' entrepreneurial alertness by expanding metacognitive experience. Limitations of the study are primarily related to the sample, in the sense that deeper insights might be gained by increasing sample size and diversity, as well as by conducting additional statistical analyses. Future studies should focus on identifying specific teaching strategies and measuring their impact over time in different settings.

# ODREDNICE PODUZETNIČKE BUDNOSTI: EFEKT DEMOGRAFSKIH I METAKOGNITIVNIH VARIJABLI

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***SAŽETAK***

*Poduzetnička budnost je koncept koji spaja dva odvojena područja istraživanja – kognitivnu teoriju s teorijom stvaranja i otkrivanja poduzetničkih prilika. Prvotno je poduzetnička budnost bila definirana kao sposobnost pojedinca da u uvjetima ograničenih informacija uoči i prepozna prilike. Inicijalna istraživanja poduzetničke budnosti kasnije su proširena uključivanjem pojmova poput aktivnog djelovanja i proaktivnog stava kao temeljnih komponenti poduzetničkog ponašanja. U konačnici, istraživači su identificirali tri temeljna elementa budnosti: skeniranje i pretraživanje, udruživanje i povezivanje te vrednovanje i prosudbu. Ovo istraživanje nadovezuje se na prethodna istraživanja tako da nastoji identificirati odrednice poduzetničke budnosti. Svrha je studije istražiti ulogu demografskih varijabli (rod, razina obrazovanja, smjer studija, prethodno radno iskustvo i roditelji kao uzor u poduzetništvu) te metakognitivnog znanja i metakognitivnog iskustva kao najčešće upotrebljivanih indikatora poduzetničke metakognicije. Uzorak je obuhvatio 84 studenta poslovne ekonomije koji studiraju na šest različitih smjerova (marketing, financije, menadžment, poduzetništvo, trgovina i logistika te poslovna informatika), a podaci su analizirani metodom linearne regresije. Rezultati istraživanja ukazuju na snažnu pozitivnu povezanost između poduzetničke budnosti i metakognitivnog znanja i iskustva. Nadalje, prethodno radno iskustvo, godina studija i smjer studija imaju važnu ulogu u određivanju poduzetničke budnosti. U konačnici, model objašnjava 38,6% varijance.*

***Ključne riječi:*** *poduzetnička prilika; metakognitivno znanje; metakognitivno iskustvo*

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