Entrepreneurial opportunity scanning in the digital age

Konstantinos Fouskas

University of Macedonia, Thessaloniki, Greece

Department of Applied Informatics

ORCID: 0000-0002-0390-9346

Abstract: In this paper we focus on the opportunity scanning part of the entrepreneurial process and examine whether digitally oriented entrepreneurs vary in terms of information seeking and utilization, skills and experience and motivation compared to non-digitally oriented ones. In order to do so we conducted 52 semi-structured interviews in new business ventures from Greece, equally divided between the two groups mentioned above. The results indicate that although there are significant differences in terms of information seeking and utilization, entrepreneurs of both kinds pose similar skills and experience and have relevant motivation regarding the opportunity scanning process. To this end we believe that further research should be done regarding the entrepreneurial process to examine the impact of digital technologies and set the foundation to factors that can improve the success of new venture creation through utilization of digital tools.

Key words: entrepreneurship, digital technologies, business ventures

1. Introduction

Opportunity scanning has been one of the most important parts of the entrepreneurial process. It is the initial step that allows a potential entrepreneur to perceive these opportunities and create the venture that will pursue them (Bygrave and Hofer, 1992). Several researchers argue that opportunity recognition is the foundation of entrepreneurship (Kirzner, 1973; Kaish and Gilad, 1991; Shepherd and Douglas, 1999; Keh, Der Foo and Lim, 2002), since entrepreneurs can identify opportunities and predict future possibilities that others fail to recognize (Allinson, Chell and Hayes, 2000).

However, since technology is becoming an increasingly important part of entrepreneurship, it is also becoming more crucial in the entrepreneurial process as well. It is important to understand the role of digital technologies that may impact this process in order to better utilize them, improve the results in identification of unique and viable entrepreneurial ideas that can turn out to be successful business ventures. The limited focus on opportunity sources originated in the direct en-

Correspondence to:
Ass. Prof. Konstantinos Fouskas, PhD
University of Macedonia
Department of Applied Informatics
156 Egnatia Street
GR-546 36 Thessaloniki, Greece
Tel.: +30 2310 891 845
E-mail: kfouskas@uom.gr

© 2019 MWSE
DOI: 10.25944/znmwse.2019.02.101114

vironment of the entrepreneur can vastly grow, using technology to access and validate ideas that have been out of his focus. Also, a common problem related to opportunity scanning, the limited attention of competitive efforts that relate to the specific business idea can be reduced by the utilization of digital technology and relevant sources in order to increase the chances of a successful entrepreneurial attempt.

In this paper we examine the entrepreneurial process and we focus on the opportunity scanning phase, identifying the relevant factors that influence it. This will allow us to examine the important components that are being modified in entrepreneurial opportunity scanning by the impact of digital technologies and set the foundation to factors that can improve the success of new venture creation through utilization of digital tools.

The structure of this paper is as following. First, we draw on previous research to discuss the opportunity scanning process. Following, we identify the relevant factors that have emerged from this research in order to develop a model that we utilize in our research. By developing our research model, we move to the next section that describes our research methodology and consequently the results of our research. Finally, we present our conclusions, implications for entrepreneurs and academic research and discuss the limitations of our research providing relevant future research opportunities.

2. Opportunity scanning in entrepreneurship and digital entrepreneurship

The process of starting a new venture is embodied in the entrepreneurial process, which involves finding, evaluating, and developing an opportunity by overcoming the forces that resist the creation of something new. The process has four distinct phases: (1) identification and evaluation of the opportunity, (2) development of the business plan, (3) determination of the required resources, and (4) management of the resulting enterprise (Hisrich, Peters and Shepherd, 2005). Although these phases are progressive, they are not dealt in isolation since they are interconnected.

Identification and evaluation of the opportunity is a crucial stage in entrepreneurship since the field of entrepreneurship involves the study of sources of the opportunities and enterprising individuals that evaluate, discover and exploit them (Scott, Shane and Venkataraman, 2000). Opportunity is defined as a 'future situation which is deemed feasible and desirable' (Eckhardt and Shane, 2003, p. 336). Scott, Shane and Venkataraman (2000) and Campbell (1992) suggest that entrepreneurial opportunities are situations in which new goods, services, markets organizational methods and raw materials can be introduced through the formation of new ends, means or means–ends relationships.

Entrepreneurship involves new value creation by recognizing and seizing opportunities, and transforming them into marketable goods or services, assuming risk, and realizing rewards (Hull et al., 2007). Digital entrepreneurship is a subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitized. Many researchers call for a deeper analysis of this phenomenon (Matlay and Westhead, 2007; Walker and Webster, 2006; Warren, 2002), since digital transformation is occurring in several industries. Common activities, processes, boundaries, and relationships associated

with the digitization of the firm involve the degree of digital marketing undertaken by a firm, a firm's digital sales, the digital nature of a firm's value proposition, the digital distribution of this value proposition, collaboration and interactions with key external stakeholders within the value chain in digital form and the potential of digitization of internal activities associated with a firm's operation (Hull et al., 2007).

Digital technologies can assist opportunity scanning by use of digital technology in the entrepreneurial process. Recent research has illustrated that digital technologies give rise to a vast potential for product and service innovation (Nylén and Holmström, 2015) and that digital technology expanded beyond internal dimensions, penetrating firms' product and service offerings (Yoo, Boland, Lyytinen and Majchrzak, 2012) vastly altering several industries (e.g., Evans, Hagiu and Schmalensee, 2006). To this end they provide a significant amount of new opportunities that can assist the process of entrepreneurial opportunity scanning by providing new sets of triggers and opportunities.

3. Research model development

In order to utilize the key factors that affect opportunity scanning we examined previous research and identified information seeking and utilization, skills and experience, and motivation among the most dominant factors that influence the process.

Scholars have tried to understand entrepreneurial opportunity while using four distinct approaches. They have looked at it empirically and conceptually and for both the opportunity itself and opportunity-related processes. Moreover, scholars have debated exactly what constitutes an entrepreneurial opportunity and in doing so, they have generated a wide variety of definitions, resulting in significant variance in perspectives (Mitchell et al., 2007). Prior knowledge, creativity and motivation are important for opportunity scanning process. The opportunity recognition in the digital field can try to capitalize on the global trends and skills sets of an entrepreneur, while the opportunity identification often occurs when someone notices something concrete in everyday life which can be conceptualized online.

Opportunity scanning includes information seeking, which is usually considered an antecedent to interpretation and to action. Research shows that information plays a very crucial role in the opportunity scanning process and it is a common theme in opportunity recognition research. A successful entrepreneur possesses the ability to identify opportunities. Gaglio and Katz (2001) argued that 'understanding the opportunity identification process means one of the core intellectual questions for the field of entrepreneurship. Research shows that knowledge (education) seems to facilitate opportunity recognition and different types of knowledge cause the recognition of different types of opportunities. Furthermore, knowledge related to opportunity recognition can be internal to the entrepreneur plus it can be provided by external sources like the venture capital investors. The entrepreneurs' prior knowledge plays an important role in the cognitive process of structural alignment that 'connects the known with the unknown' and in doing so, can facilitate opportunity recognition. The prior knowledge, the one gained through education, can help the individuals to accumulate and integrate the new knowledge, which in turn opens a wider opportunity set (Gimeno, Folta, Cooper and Woo, 1997). Davidsson and Honig (2003) found that the years of education positively influence someone's opportunities identification.

Shane (2003) identified three basic dimensions of prior knowledge that are very important to the process of an opportunity identification. The first one is the prior knowledge of the markets, that enables people to understand demand conditions, therefore facilitating opportunity discovery. Secondly is the prior knowledge of how to serve the markets, that helps identify the opportunities because people know the operations and rules of the markets. Finally, the marketing processes gained from introducing a new service or product. Moreover, the prior knowledge of the problems of the customers or their needs stimulates the opportunity identification because knowledge like this would help trigger a new product or service in order to solve the customer problems or to satisfy unmet needs (Urban and von Hippel, 1988).

Information seeking and utilization is expected to be different among digitally and non-digitally oriented entrepreneurs, since the second are expected to have more information technology-oriented backgrounds and utilizing them to more efficiently collecting and processing information that is related to market analysis in terms of understanding and serving specific markets and utilizing digital tools to optimize the process.

Opportunity recognition also depends on the entrepreneur's skills and experiences. As we have already mentioned, entrepreneur's personality plays a key role in making opportunity scanning evaluations. Prior experiences and personal characteristics also help to constrain the evaluation of opportunities. Some opportunities are the result of a process of enactment where an entrepreneur has an idea and gives it a meaning. Others are located and discovered. Differences in performance arise from the quality of opportunities, the creativity of modes of exploitation entrepreneurs use or their location. Explanations for how new opportunities emerge include prior experiences, personal disposition, changes in the broader environment, gaining specific information, and being an unsatisfied user (Gaglio and Katz, 2001; Shane, 2000; Tripsas, 2008).

Furthermore, discovering new opportunities has to do with skills, personal awareness and insights (Kirzner, 1999; Kaish and Gilad, 1991). Very important among skills is creativity, since it is very important in developing and elaborating these skills into something exploitable. Besides prior knowledge, creativity is directly related to a person's technical, managerial, entrepreneurial and strategic skills and competencies that have a strong bearing on what a person perceives within an environment. This influenced the prior knowledge people have and the fundamental assumptions of the world. Connection and association reflect the entrepreneurs' ability to piece together unconnected information. This association should be related to the individuals' creativity, or their ability to generate appropriate ideas, processes, products or solutions (Shalley, 1995). We expect to identify several differences in terms of entrepreneurial skills and experiences among digitally and non-digitally oriented entrepreneurs since we expect the former to utilize digital tools to enhance the process and eliminating the need for increased creativity in order to connection and associate relevant opportunities.

Finally, motivation could be described as what energizes or drives people to move from one action to another in behavioural process (Nuttin, 1984). The motivation factor has been studied in order to answer three kinds of different questions: what really activates a person, what makes him or her to choose one thing over another thing and why different people respond differently to the same situations. These questions give a rise to three important aspects of motivation that are selection-direction, activation and preparedness of response (Pervin,

2003). In this study motivation refers to what Nuttin (1984, p. 14) defines as 'the dynamic and directional (i.e. selective and preferential) aspect of behaviour.' It is the motivation that is responsible for the fact that a behaviour moves towards one category of objects rather than another category. We hypothesize that different types of motivation will have a different impact on digitally versus non-digitally oriented entrepreneurs.

In our research we try to assess these three types of influences by examining two distinctive groups of entrepreneurs. The first group is consisted of entrepreneurs engaged in digital related entrepreneurship. Digital entrepreneurship can be defined as entrepreneurship in which some or all of the entrepreneurial venture take place digitally instead of taking place in traditional formats (Hull et al., 2007). The workplace, products, distribution and more like this could take digital form in an entrepreneurial venture. The second group consisted of entrepreneurs engaged in non-digital entrepreneurship. We hypothesize that entrepreneurs creating ventures related to digital entrepreneurship face different opportunities and challenges and need to act differently in their entrepreneurial ventures.

4. Research methodology

For the purpose of this study we identified a sample of 213 newly created companies originated in Greece in order to examine differences between the characteristics of digitally and non-digitally oriented entrepreneurs in terms of information seeking and utilization, skills and experience, and motivation. All companies were contacted through electronic means and the ones who were willing to participate in the research were interviewed either in person or through teleconference software. 60 of them initially agreed to participate in this research and finally 52 of them were interviewed.

We choose a semi-qualitative research approach and more specifically a qualitative research interview in order to describe and understand the meaning of what the interviewees say (Warren, 2002). A qualitative research interview seeks to cover both a factual and a meaning level, though it is usually more difficult to interview on a meaning level (Kvale, 1996). Interviews are particularly useful for getting the story behind a participant's experiences, since the interviewer can pursue in-depth information around the topic. Interviews may be useful as follow-up to certain respondents to questionnaires, e.g. to further investigate their responses (McNamara, 1999). In order to eliminate bias, since the interviewer can control the quality of the result, we trained all the interviewers (2 persons) and organized in detail and rehearsed the interviewing process before beginning the formal study. All interviewers had been informed on the background of the study and why the study is important (apart from simply knowing how to conduct the interview itself) and the sampling was done by external experts based on data available to the researchers.

The interview questionnaire consisted of the four constructs, information seeking and utilization in opportunity scanning, skills and experience usage in opportunity scanning, motivational factors that affect entrepreneurs in opportunity scanning and demographics. The first (information seeking and utilization) and the second construct (skills and experience usage) were based on the work of Tang, Kacmar and Busenitz (2012) and asked questions such as: I have frequent interactions with others to acquire new information, I am an avid information seeker, I often make novel connections and perceive new or emergent relationships between

various pieces of information and I often find differences between the way I see certain situations and the way other people see them. The third construct (motivation) had to do with motivation regarding becoming an entrepreneur. The construct was based on the work by Elfving, Brännback and Carsrud (2009) and is consisted of questions related to the motivational drive such as: I wanted to reach my goals in life and I wanted to continue a family tradition. The final set of questions is related to the demographic characteristics of the respondent (e.g. sex, age, years of working experience, etc.).

52 semi-structured interviews were conducted during the first semester of 2018 based on a pre-developed questionnaire. For each group (digitally and non-digitally oriented entrepreneurs) the same number of semi-structured interviews we conducted (26) in order to ensure two independent samples with the same amount of observations. In order to validate the findings, additional sources of data were used, namely semi-structured interviews, e-mail correspondence and video calls with key participants, and reviews of internal presentation materials. The informants were start-up founders directly related to the formation of the start--up and our goal was to examine the differences between the two types of respondents. Each interview was coded using a set of pre-determined questions based on previously developed research tools and additional questions we asked in order to elaborate where there were questions of misinterpretations. Our final set consisted of two sets of answers that were carefully examined in order to identify differences between the two groups. We deployed t-test in order to statistically examine the difference between the two groups. The results are presented in the following section.

5. Results

All results collected were aggregated for each group and compared in order to see if there were any significant differences. Independent-samples t-test was conducted to compare the differences between digitally oriented and non-digitally oriented entrepreneurs in all three types of influence in opportunity scanning process. We present the results for each construct separately.

To begin with, there was a significant difference in the scores for digital entrepreneurs and non-digital entrepreneurs for almost all items regarding information utilization as seen in Table 1.

Table 1. Differences in information seeking and utilization between digital and non-digital entrepreneurs

Specification		N	Mean	Std. Deviation	t	Sig. (2-tailed)
While going about day-to--day activities, I try to look for new business ideas	Digital Entrepreneur	26	4.00	1.020	2.560	0.014
	Non-Digital Entrepreneur	26	3.31	0.928		
I am an avid information seeker	Digital Entrepreneur	26	4.54	0.706	4.691	0.000
	Non-Digital Entrepreneur	26	3.27	1.185		

Specification		N	Mean	Std. Deviation	t	Sig. (2-tailed)
I am always actively looking for new information	Digital Entrepreneur	26	4.58	0.504	2.454	0.018
	Non-Digital Entrepreneur	26	4.12	0.816		
I always keep an eye out for new business ideas when looking for information	Digital Entrepreneur	26	4.35	0.745	2.808	0.007
	Non-Digital Entrepreneur	26	3.62	1.098		
I have frequent interactions with others to acquire new information (personal)	Digital Entrepreneur	26	4.27	0.667	3.040	0.004
	Non-Digital Entrepreneur	26	3.50	1.105		
I have frequent interactions with others to acquire new information (online)	Digital Entrepreneur	26	3.73	1.218	3.214	0.002
	Non-Digital Entrepreneur	26	2.65	1.198		
Offline acquisition of new information	Digital Entrepreneur	26	3.96	1.148	0.974	0.335
	Non-Digital Entrepreneur	26	3.65	1.129		
Online acquisition of new information	Digital Entrepreneur	26	4.38	0.983	5.000	0.000
	Non-Digital Entrepreneur	26	2.85	1.223		
I regularly seek information from physical resource centres	Digital Entrepreneur	26	3.50	1.068	0.132	0.895
	Non-Digital Entrepreneur	26	3.46	1.029		
I regularly seek information from online resource centres	Digital Entrepreneur	26	3.96	1.113	3.593	0.001
	Non-Digital Entrepreneur	26	2.77	1.275		

S o u r c e: Author's own elaboration.

Regarding looking for new business ideas in day-to-day activities, being an avid information seeker, actively looking for new information and keeping an eye out for new business ideas when looking for information there was a significant difference in the scores for digital and non-digital entrepreneurs ($p<0.005$). For all cases, digitally oriented entrepreneurs exhibit a higher mean in scores. Regarding frequent personal and online interactions with others to acquire new information, online acquisition of new information and seeking information from online resource centres, there was also a significant difference in the scores for digital and non-digital entrepreneurs ($p<0.005$). In these items, digitally oriented entrepreneurs exhibit a higher mean as well. Concerning offline acquisition of new information and seeking information from physical resource centres, no significant difference between the two groups was indicated.

However, for the next construct regarding almost all items related to skills and experience usage we see almost no difference between the two groups, as presented in the Table 2.

Table 2. Differences in skills and previous experience between digital and non-digital entrepreneurs

Specification		N	Mean	Std. Deviation	t	Sig. (2-tailed)
I often see connections between previously unconnected domains of information	Digital Entrepreneur	26	3.62	0.852	0.648	0.520
	Non-Digital Entrepreneur	26	3.46	0.859		
I often make novel connections and perceive new or emergent relationships between various pieces of information	Digital Entrepreneur	26	3.81	0.939	0.798	0.429
	Non-Digital Entrepreneur	26	3.58	1.137		
I often find differences between the way I see certain situations and the way other people see them	Digital Entrepreneur	26	4.23	0.908	2.824	0.007
	Non-Digital Entrepreneur	26	3.54	0.859		
I often think 'outside the box'	Digital Entrepreneur	26	4.31	0.884	1.272	0.209
	Non-Digital Entrepreneur	26	3.92	1.262		
I see links between seemingly unrelated pieces of information	Digital Entrepreneur	26	4.15	0.675	2.409	0.020
	Non-Digital Entrepreneur	26	3.50	1.208		
I had enough industrial knowledge	Digital Entrepreneur	26	3.65	1.231	1.903	0.063
	Non-Digital Entrepreneur	26	3.08	0.935		
I have sufficient digital skills	Digital Entrepreneur	26	3.96	1.113	2.952	0.005
	Non-Digital Entrepreneur	26	3.00	1.233		
I have sufficient Communication skills	Digital Entrepreneur	26	2.73	1.373	0.308	0.759
	Non-Digital Entrepreneur	26	2.62	1.329		
I have sufficient Business Networking skills	Digital Entrepreneur	26	2.65	1.325	−0.414	0.681
	Non-Digital Entrepreneur	26	2.81	1.357		
I have sufficient Risk Taking skills	Digital Entrepreneur	26	2.85	1.461	−0.983	0.331
	Non-Digital Entrepreneur	26	3.27	1.638		
I knew how to start a business	Digital Entrepreneur	26	2.65	1.093	1.059	0.295
	Non-Digital Entrepreneur	26	2.38	0.697		

S o u r c e: Author's own elaboration.

The only three items that display significant differences ($p<0.005$) are understanding differences between the way they see certain situations and the way other people see them, seeing connections between previously unconnected pieces of information and having sufficient digital skills. For all three questions, digitally oriented entrepreneurs exhibit a higher mean

than non-digitally oriented ones. On the other hand, regarding making novel connections and perceiving new or emergent relationships between various pieces of information, thinking 'outside the box', having enough industrial knowledge, communication, business networking and risk taking skills and having knowledge to start a business we see no significant difference between the two groups.

Regarding motivations that lead to starting a business we also observe that only limited items exhibit significant difference between the two groups (Table 3).

Table 3. Difference in motivations to start a business between digital and non-digital entrepreneurs

Specification		N	Mean	Std. Deviation	t	Sig. (2-tailed)
I wanted to reach my goals in life	Digital Entrepreneur	26	4.58	0.643	1.893	0.064
	Non-Digital Entrepreneur	26	4.00	1.414		
The independence appealed to me	Digital Entrepreneur	26	4.31	0.884	1.554	0.127
	Non-Digital Entrepreneur	26	3.88	1.071		
It was a way to get a job	Digital Entrepreneur	26	2.04	1.113	1.067	0.291
	Non-Digital Entrepreneur	26	1.73	0.962		
I wanted to become rich	Digital Entrepreneur	26	3.35	1.093	−0.415	0.680
	Non-Digital Entrepreneur	26	3.46	0.905		
I had a good business idea	Digital Entrepreneur	26	4.23	0.992	2.155	0.036
	Non-Digital Entrepreneur	26	3.54	1.303		
I believed in my own abilities	Digital Entrepreneur	26	4.62	0.852	2.448	0.018
	Non-Digital Entrepreneur	26	3.92	1.164		
The model set by my friends encouraged me to become an entrepreneur	Digital Entrepreneur	26	2.35	1.093	−0.736	0.465
	Non-Digital Entrepreneur	26	2.54	0.761		
The model set by my family or relatives encouraged me to become an entrepreneur	Digital Entrepreneur	26	1.85	1.047	−1.022	0.312
	Non-Digital Entrepreneur	26	2.23	1.608		
I wanted to continue a family tradition	Digital Entrepreneur	26	1.69	0.928	0.246	0.807
	Non-Digital Entrepreneur	26	1.62	1.299		
I had suitable partners	Digital Entrepreneur	26	3.19	1.415	1.376	0.175
	Non-Digital Entrepreneur	26	2.73	0.962		

S o u r c e: Author's own elaboration.

Digital entrepreneurs tend to more often believe that having a novel idea and believing in their own abilities is directly related to their motivation than non-digital ones and so we can see a significant difference in the scores of the two groups ($p<0.005$). However, regard-

ing willingness to reach goals in their life, pursuit of independence, finding a job, becoming riches, following a model set by their friends, their family or relatives, following a family tradition and having suitable partners pose no significant difference between the two groups. Finally, some demographics of the two groups are presented in Table 4.

Table 4. Demographic data of the sample for digital and non-digital entrepreneurs

		Digital Entrepreneur	Non-Digital Entrepreneur	Total
Gender	Man	20	18	38
	Woman	6	8	19
Total		26	26	52
Age	18–25	2	0	2
	25–30	7	6	13
	30–35	7	13	20
	35–40	3	0	3
	40+	7	7	14
Total		26	26	52
Education Level	Bachelor	5	14	19
	Master	17	12	29
	PhD	4	0	4
Total		26	26	52
Field of Education	HealthTech	0	3	3
	Information and Technology	15	3	18
	Education-EduTech	2	0	2
	Audio Visual	2	3	5
	Other	7	17	24
Total		26	26	52
Years of working experience	1–3 years	1	0	1
	3–6 years	7	3	10
	6–9 years	7	14	21
	More than 9 years	11	9	20
Total		26	26	52

S o u r c e: Author's own elaboration.

As we can see, most characteristics in the two groups are similar; with the exception of education level were digital entrepreneurs who seem to have higher academic degrees. This allows us to assume that both groups share similar characteristics and can be compared.

6. Conclusions, limitations and future research

Based on the results presented in the previous section we can assume that the opportunity scanning process poses partial differences between digital and non-digital entrepreneurs. We examined three types of influences in the opportunity scanning process by examining two distinctive groups of entrepreneurs. The first group consisted of entrepreneurs engaged in digital related entrepreneurship, where some or the entire entrepreneurial venture takes place digitally instead of taking place in traditional formats and the second consisted of the entrepreneurs engaged in non-digital entrepreneurship where most of the entrepreneurial venture takes place in traditional formats.

These three types of influences regarded information seeking and utilization, previous skills and experience and motivation of the entrepreneur. Our results indicate that while digitally and non-digitally oriented entrepreneurs significantly differ in the first type of influence by exhibiting much more active behaviour in information seeking and utilization, they are more or less similar regrading skills and experience and motivation.

This can be explained by the fact that digital entrepreneurs utilize more actively digital tools to increase their reach in terms of acquiring information to find or enhance their business opportunities. They have been exposed to more avid information seeking experiences and exhibit this in both digital activities (e.g. online interactions with others to acquire new information, online acquisition of new information and seeking information from online resource centres) and non-digital ones (e.g. personal interactions with others to acquire new information). In non-digital related activities (e.g. offline acquisition of new information and seeking information from physical resource centres) both groups exhibit similar behaviour. What is more important is that active information seeking (e.g. looking for new business ideas in day-to-day activities, being an avid information seeker, actively looking for new information and keeping an eye out for new business ideas when looking for information) is more important for digital-related entrepreneurs and can be related to the fact that digital entrepreneurs are more willing to globally compete and have to be able to spot opportunities not directly related to their adjacent competitive environment. Moreover, since previous education is directly related to information seeking and recognition, we have to take into consideration that the digitally oriented entrepreneurs group has higher academic degrees.

We also see that what is not related to information seeking and utilization is not significantly different between digital and non-digital entrepreneurs. They both rely on similar skillsets and experiences and have common motivational characteristics. As expected digital related entrepreneurs are more skillful regarding digital skills, but both groups have good communication, business networking and risk taking skills and knowledge regarding both their respective industry and how to start a business. We can also see that in some questions related to creativity digital entrepreneurs seem also more capable but in many cases this applied for non-digitally oriented ones as well. This indicates that starting a business requires strong skills and experience, regardless its digital focus.

The same applies for motivation. Both groups seem to be driven by similar motivational characteristics as they are willing to reach their goals, prefer independence and are not very concerned in seeing entrepreneurship as a way to get a job or getting rich. Both groups do not seem to follow a model set by their friends, their family or relatives, or a family tradition. They also tend to believe that having suitable partners is important in order to pursue their business idea. Digital entrepreneurs tend to believe that they have a novel idea and believe more in their own abilities since they have to rely on technical innovation most of the times to compete in their respective industry. These findings also indicate that digital and non-digital entrepreneurs have common motivational characteristics, something that was to be expected, since they share common values and beliefs.

Our research poses some limitations. The sample size is limited and originated in a single country. Also, we have not sufficiently tested our research instrument for validity before its application, although relying on already validated constructs. The research could also be extended in order to in depth analyze more characteristics that affect the opportunity scanning process. However, this research is mainly exploratory and can become a starting point for examining both differences and similarities in digital and non-digital entrepreneurs. Although the basis for many of their actions might be the same, we can expect that digital technologies will have an increasingly important role in seeking information and framing their decisions.

This research also has implications for academia and entrepreneurs. We can expect academic wise to better understand the role of digital technology in framing the entrepreneurial process and understand the unique characteristic of digital entrepreneurs, as well as what can lead them to increased chances to develop a successful business venture. Regarding entrepreneurs our findings are important, especially for non-digitally oriented ones, since they can better apply digital tools to information seeking and utilization in order to have improved results in identification of unique and viable entrepreneurial ideas that can assist them in opportunity scanning. The limited focus on opportunity sources originated in the direct environment of the potential entrepreneur can be enhanced using technology to access and validate ideas that have been out of their focus.

Further research can focus on connecting the results of the opportunity scanning process with economic, growth or funding related results and validate whether differences in the opportunity scanning process between digital and non-digital entrepreneurs can increase or not their chances to lead successful business ventures. Moreover, other processes related to entrepreneurship beyond opportunity scanning can be examined to see if we can also witness differences or similarities between digitally and non-digitally oriented entrepreneurs.

References

Allinson, C. W., Chell, E., Hayes, J. (2000). Intuition and entrepreneurial behaviour. *European Journal of Work and Organizational Psychology*, *9* (1), 31–43.

Bygrave, W. D., Hofer, C. W. (1992). Theorizing about entrepreneurship. *Entrepreneurship Theory and Practice*, *16* (2), 13–22.

Campbell, C. A. (1992). A decision theory model for entrepreneurial acts. *Entrepreneurship Theory and Practice*, *17* (1), 21–27.

Davidsson, P., Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, *18* (3), 301–331.

Eckhardt, J. T., Shane, S. A. (2003). Opportunities and entrepreneurship. *Journal of Management*, *29* (3), 333–349.

Elfving, J., Brännback, M., Carsrud, A. (2009). Toward a contextual model of entrepreneurial intentions. In: A. L. Carsrud, M. Brännback (eds.). *Understanding the entrepreneurial mind*. New York: Springer Verlag. ISBN 9781441904423.

Evans, D. S., Hagiu, A., Schmalensee, R. (2006). *Invisible engines: How software platforms drive innovation and transform industries*. Cambridge, MA: MIT Press. ISBN 9780262050852.

Gaglio, C. M., Katz, J. A. (2001). The psychological basis of opportunity identification: Entrepreneurial alertness. *Small Business Economics*, *16* (2), 95–111.

Gimeno, J., Folta, T. B., Cooper, A. C., Woo, C. Y. (1997). Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, *42* (4), 750.

Hisrich, R. D., Peters, M. P., Shepherd, D. A. (2005). *Entrepreneurship*. Boston, MA and London: McGraw-Hill/Irwin. ISBN 0072971851.

Hull, C. E., Hung, Y. T. C., Hair, N., Perotti, V., DeMartino, R. (2007). Taking advantage of digital opportunities: A typology of digital entrepreneurship. *International Journal of Networking and Virtual Organisations*, *4* (3), 290.

Kaish, S., Gilad, B. (1991). Characteristics of opportunities search of entrepreneurs versus executives: Sources, interests, general alertness. *Journal of Business Venturing*, *6* (1), 45–61.

Keh, H. T., Der Foo, M., Lim, B. C. (2002). Opportunity evaluation under risky conditions: The cognitive processes of entrepreneurs. *Entrepreneurship Theory and Practice*, *27* (2), 125–148.

Kirzner, I. M. (1973). *Competition and entrepreneurship* [online, accessed: 2019-04-03]. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1496174.

Kirzner, I. M. (1999). Creativity and/ or alertness: A reconsideration of the Schumpeterian entrepreneur. *The Review of Austrian Economics*, *11* (1/2), 5–17.

Kvale, S. (1996). *InterViews: An introduction to qualitative research interviewing*. Thousand Oaks and London: Sage Publications. ISBN 080395820X.

Matlay, H., Westhead, P. (2007). Innovation and collaboration in virtual teams of e-entrepreneurs. *The International Journal of Entrepreneurship and Innovation*, *8* (1), 29–36.

Mitchell, R. K., Busenitz, L. W., Bird, B., Marie Gaglio, C., McMullen, J. S., Morse, E. A., Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, *31* (1), 1–27.

Nuttin, J. (1984). *Motivation, planning, and action: A relational theory of behavior dynamics*. Leuven and Hillsdale, NY: Leuven University Press and Lawrence Erlbaum Associates. ISBN 0898593328; 9061861543.

Nylén, D., Holmström, J. (2015). Digital innovation strategy: A framework for diagnosing and improving digital product and service innovation. *Business Horizons*, *58* (1), 57–67.

Pervin, L. A. (2003). *The science of personality*. Oxford: Oxford University Press. ISBN 0195159713.

Shalley, C. E. (1995). Effects of coaction, expected evaluation, and goal setting on creativity and productivity. *Academy of Management Journal*, *38* (2), 483–503.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, *11* (4), 448–469.

Shane, S. (2003). *A general theory of entrepreneurship: The individual-opportunity nexus*. Cheltenham: E. Elgar. ISBN 1843763826.

Shane, S., Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, *25* (1), 217–226.

Shepherd, D. A., Douglas, E. J. (1999). *Attracting equity investors: Positioning, preparing, and presenting the business plan*. Thousand Oaks, CA: Sage Publications. ISBN 0761914773.

Tang, J., Kacmar, K. M. M., Busenitz, L. (2012). Entrepreneurial alertness in the pursuit of new opportunities. *Journal of Business Venturing*, *27* (1), 77–94.

Tripsas, M. (2008). Customer preference discontinuities: A trigger for radical technological change. *Managerial and Decision Economics*, *29* (2–3), 79–97.

Urban, G. L., von Hippel, E. (1988). Lead user analyses for the development of new industrial products. *Management Science*, *34* (5), 569–582.

Walker, E., Webster, B. (2006). Management competencies of women business owners. *The International Entrepreneurship and Management Journal*, *2* (4), 495–508.
Warren, C. A. B. (2002). Qualitative Interviewing. In: *Handbook of interview research*. ISBN 9780761919513.
Yoo, Y., Boland, R. J., Lyytinen, K., Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science*, *23* (5), 1398–1408.

Badanie możliwości przedsiębiorczych ery cyfrowej

Abstrakt: W niniejszym artykule skupiamy się na prześledzeniu części procesu przedsiębiorczego oraz na zbadaniu, czy przedsiębiorcy zorientowani na technologie cyfrowe różnią się od tych, którzy nie są cyfrowo ukierunkowani. Analizie podlegały sposoby poszukiwania informacji i ich wykorzystanie, umiejętności i doświadczenia oraz motywacja. W tym celu przeprowadziliśmy 52 częściowo ustrukturyzowane wywiady w nowych greckich przedsiębiorstwach, wyłonionych równomiernie z grup o przeciwnym podejściu do wykorzystywania technologii. Wyniki wskazują, że chociaż istnieją znaczne różnice w zakresie wyszukiwania i wykorzystania informacji, zarówno przedsiębiorcy ukierunkowani na technologię, jak i ci niechętnie ją stosujący mają podobne umiejętności i doświadczenia oraz odpowiednią motywację do badania i wykorzystywania możliwości. Wierzymy, że należy przeprowadzić dalsze badania dotyczące procesu przedsiębiorczego, aby zbadać wpływ technologii cyfrowych i stworzyć fundament dla czynników, które mogą zapewnić sukces w tworzeniu nowych przedsięwzięć z wykorzystaniem narzędzi cyfrowych.

Słowa kluczowe: przedsiębiorczość, technologie cyfrowe, przedsięwzięcia biznesowe