

# Prior knowledge, cognitive characteristics and opportunity recognition level of SMEs in Sri Lanka.

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## ABSTRACT

The multidimensional view of opportunity recognition is addressed differently by number of scholars. However theoretical bases in this regard are still fragmented. We addressed the suggestion of Shepherd, (2015) and assess the relationship between cognitive ability and the level of opportunity recognition of entrepreneurs in Sri Lanka. In order to answer why and how some individuals identify opportunities, the purpose of this paper is to identify the role of prior knowledge and cognitive characteristics of entrepreneurial alertness and learning in the entrepreneurial opportunities recognition process. First, the authors identified key effective factors and developed research hypotheses and assess the relationship. The authors considered research methodology including sampling and data collection, measurement model and the study conducted using small and medium scale entrepreneurs in Sri Lanka, in Western province. The findings show that all the three factors had positive impact on opportunity recognition. By using this study, entrepreneurs will be able to identify and enhance the factors that influence opportunity recognition.

**Keywords:** Entrepreneurial learning, Opportunity recognition, Entrepreneurial alertness, Prior knowledge

**Paper type:** Research paper

## 01. INTRODUCTION

Entrepreneurship can be highlighted as the main driver of development in any country irrespective of the status it holds, may it be an under-developed/ developing country or a developed country. Entrepreneur is someone who actually searches for change, responds to it, and exploits change as an opportunity (Drucker, 1909). In general, the process of entrepreneurship can be divided into two sub-processes, namely, opportunity discovery and opportunity exploitation (Shane and Venkataraman, 2000; Shane S.,2003;).

The entrepreneur perceives an opportunity and often reveals biases in taking the decision to exploit the opportunity. Thus opportunity identification can be defined as the heart of entrepreneurship. It, therefore, is important to research the linkage between opportunity and identification whether it rightfully is an opportunity in creation of ventures of a country.

However, one person may be able to perceive a situation as an opportunity while another person may not have the attribute - the cognitive ability of an individual, in this regard. Identifying an entrepreneurial opportunity is a cognitive skill and can only be determined post-hoc (Shepherd, 2015). Hence, pursuing opportunities is a difficult challenge for entrepreneurs. A high number of ventures are formed and the majority of them fail due to this specific reason. The level of identifying opportunities depends on their perception of a situation. For some people, situations represent opportunities and some people don't take situations as opportunities. To identify a situation as an entrepreneurial opportunity, someone should have a cognitive skill in nature. Because the perception acts as an internal cognitive stimulant and it is representing the process through which a person suddenly moves from a state of not knowing to a state of knowing (Mayer, 1992). Therefore, an entrepreneurial mind arrives from not knowing to knowing and it depends on the immensity of the cognitive ability of the mind. Consequently, explaining the discovery and development of opportunities is a key part of entrepreneurship research (Venkataraman, 1997). Numerous models of opportunity recognition have been presented in recent years (Bhave, 1994; Singh, R, Hills, H, & Lumpkin, G.T, 1999; De Koning, 1999; Sigrist, 1999). These models are based on different, often conflicting, assumptions borrowed from a range of disciplines, ranging from cognitive psychology to Austrian economics.

While these attempts have contributed greatly to our understanding of opportunity identification, they fall short of offering a comprehensive understanding of the process for two major reasons. First, each of these perspectives primarily concentrates on only one of the various aspects of the process. For example, Sigrist (1999) looks at the cognitive processes involved in opportunity recognition. And, De Koning (1999) and Hills, G, Lumpkin, G.T, and Singh, R.P, (1997) on the social study network context; while Shane, (1999) focuses on the prior knowledge and experience necessary for successful recognition.

However, the concept of Identifying opportunities multidimensional. Different scholars conceptualize it differently. This diverse dimensional views have not been addressed by much scholars at present, however, scholars' view in this regard is the literature is still fragmented (Ardichvili, et al., 2003). This phenomenon has a less attention and conceptual and theoretical developments have been limited. Therefore, here we intend to create picture on perception of situations as opportunity by means of developing a conceptual model. We believe our endeavor will positively contribute to disentangle the existing fragmented literature.

The opportunity recognition and perception of opportunity have recently become a main attention of research as the core activities of entrepreneurs (Gaglio, 1997; Venkataraman, 1997; Shane, S and Venkataraman, S, 2000; Murphy, 2011). Entrepreneurs are distinctive by their ability to exploit and perceive opportunities

ignored by others (Schumpeter, 1942). Furthermore, Shane, S and Venkataraman, S, (2000) argue that opportunity exists as an objective phenomenon that is not known to all individuals. Existing only when perceived by the individual, “opportunity by definition is unknown until discovered” (Kaish, S & Gilad, B, 1991). According to this discovery view of opportunity perception, certain individuals are more alert to see and identify those opportunities while others not. And, identification of an entrepreneurial opportunity is a cognitive skill (Shepherd, 2015) and it’s the function of the mind.

Thus, the rationale developed here is, there is a relationship between the cognitive abilities and the representation of a situation as an opportunity and this representation affect by many factors. Therefore, the proposed study arrives to a problem where, what role does cognitive factors play in identifying opportunities perceived as situations?

Given the prerequisite and the scholarly attempt, this paper intends to assess the relationship between cognitive skill and opportunity recognition within the context of Small and Medium Sized firms. As an initial point, we intend to identify the core constructs of the study as an entry point to discuss theoretical perspectives and pertaining proposition developments. Thereafter, the study proceeds to the discussion and presentation of the results of the study.

### **1.1. Problem Statement**

Small and Medium Scale Enterprises are considered as the backbone of the economy of any country and it stimulates the spirit of entrepreneurship. These SMEs operate in all sectors of the economy; primary, secondary and tertiary. Though the ventures comprehend the value of expansion generally small entrepreneurs associate the problems of shortage of capital and managerial skills, use of obsolete technology, reduction in market competitiveness, lack of entrepreneurial policies (Gamage, 2003). So this creates a dilemma where, though small entrepreneurs seek for growth, the encountering problems hinder their capacities. This is not identified as a context specific dilemma. For an instant, Barringer, et al., (2005) highlighted that, some firms report more than 80% sales growth every year (they are called Gazells) whereas majority reports less growth (average 3.5% in the USA). It is estimated that 85 percent of SME's face significant survival challenges and more than 75 percent fail within five years of startup (Asian SME Summit, 2009). The trend is similar among other countries including the USA but percentages vary from country to country. This is a serious problem faced by the entrepreneurial society. Wealth creation, country economic growth and employment generation may slow down due to collapse and slow performance of SME's.

Though all the types of firms comprehend the value of performance, the general acceptance is that, some ventures registered for high performance potential and the others do not. So it is identified as a dilemma or a practical question in this study.

Regardless of the type and the scale of business or firm, being entrepreneurial is important. Indeed, to be entrepreneurial, it requires innovation, expanding, identifying opportunities and starting additional ventures (Davidsson, 1989). Given that, the opportunity identification we rationalize as the heart of entrepreneurship and emphasize, opportunity identification is the essence of entrepreneurship (Shane, S & Venkataraman, S, 2000). As we pointed above, opportunity identification has an increasing interest among the scholars at present (Ardichvili, A, et al., 2003).

According to the body of literature that has developed subsequently, cognitive resources explain how entrepreneurs perceive opportunity. Ghinea, G and Chen, S, (2003) have identified a number of cognitive resources that have been examined for entrepreneurs. They are self- efficacy, prior knowledge, learning, decision biases, and experience. Moreover, these authors recommended that future research examine backgrounds of entrepreneurial cognition, especially cognitive resources that enable opportunity perception.

The notion of opportunity recognition is a prime important factor in the field of entrepreneurship and it is a least studied dimension in the literature. Adding to this, Ardichvili, Richard Cardozo, and Sourav Ray, (2003) write that, the main cause for success of the firm is opportunity recognition and it can be found inside of the entrepreneur. Based on the rationalization of Ardichvili, et al. on opportunity recognition, we keen to propose that factors inside the firm are simply the entrepreneur and the resources which he/she holds.

Provided these practical scenarios, the researcher highlighted the fact that opportunity recognition as the heart of entrepreneurship and the notion itself has taken a considerable attention from the researchers. Opportunity identification is multidimensional. Different scholars address the concept in different ways imposing various conceptualizations. This variedness of the literature has led the scholars to pay a more attention but still, literature stands as fragmented. Hence, in this research, it is expected that the conceptualizations of entrepreneurship education and its impact on firms performance and thereby it contribute significantly to dissolve existing problems among small entrepreneurs.

Based on the literature reviews, we found that, opportunity recognition generally arises from a series of information resources and facilitating cognitive characteristics. Therefore, taking this viewpoint into account, researcher investigated the role of prior knowledge and cognitive characteristics in terms of the two concepts of entrepreneurial alertness and learning in the process of entrepreneurial opportunity recognition. Prior knowledge refers to the sources of information developed from work experience, education or other means (Shepherd, D.A & DeTienne, D.R, 2005), and entrepreneurial alertness and learning which are two of the most important cognitive characteristics of entrepreneurs helping them in obtaining, organizing and processing new information (Gaglio, C.M & Katz, J.A., 2001; Dimov, 2007; Dimov, 2007). Given the importance of the interaction between prior knowledge and cognitive mechanisms in the opportunity identification puzzle (Dimov, 2003; Corbett, 2007) the impact of prior knowledge on entrepreneurial alertness and learning were also investigated. Finally, identifying the role of effective factors in the opportunity

recognition process, as a central element of entrepreneurship, can have a variety of theoretical and practical implications. Also, this suggested model can be used to identify problems related to the identification of entrepreneurial opportunities among individuals.

## **02. LITERATURE REVIEW AND SPECIFICATION OF HYPOTHESIS**

### **2.1. Literature Review**

An entrepreneur is an individual who is able to identify, evaluate and exploit opportunities (Shane, 2003; Venkataraman, 1997). The most fundamental question that may come to the minds of the researchers who have adopted an opportunity recognition approach is that why, when and how do some people are able to discover opportunities while others cannot (Shane and Venkataraman, 2000). Indeed, the answer to these questions provides a framework which could define how people recognize opportunities.

A number of different factors impact the opportunity recognition process. These factors can be categorized into personal characteristics and according to Shane and Venkataraman (2000), the requisites for a person to be able to recognize opportunities include: prior knowledge; cognitive characteristics to value it. Based on the theory proposed by these two researchers, this study assess the relationship between the level of opportunity recognition and cognitive abilities of entrepreneurs in the Sri Lankan context. Furthermore, it is expected that by offering and examining this framework, we could develop a deeper understanding of one of the most important abilities of entrepreneurs, and understanding of opportunity recognition and its facilitating capacities.

### **2.2. Prior Knowledge and Opportunity Recognition**

Many researchers have emphasized the role of prior knowledge in identifying entrepreneurial opportunities (Venkataraman, S, 1997; Shane, S and Venkataraman, S, 2000; Alsos, G.A and Kaikkonen, V, 2004; Baron, 2006; Marvel, M.R and Lumpkin, G.T, 2007) Marvel and Lumpkin, 2007). Prior knowledge and cognitive characteristics in terms of the two concepts of entrepreneurial alertness and learning in the process of entrepreneurial opportunity recognition (Ali Hajizadeh & Mohammadreza Zali, 2016). Prior knowledge refers to the sources of information developed from education or other means (Shepherd, D.A & DeTienne, D.R, 2005). According to Ali Hajizadeh and Mohammadreza Zali, (2016), in view of the impact of entrepreneurial alertness and entrepreneurial learning on opportunity recognition and considering that they are themselves influenced by prior knowledge.

Recognition of opportunities is subjected to the knowledge (Ali Hajizadeh & Mohammadreza Zali, 2016). Different people identify different opportunities because they possess different sources of prior knowledge and entrepreneurs only discover opportunities that draw on their prior knowledge (Venkataraman, S, 1997). So, prior knowledge acts as a guide that helps persons to pursue a situation as an opportunity. Ardichvili, A,

Cardozo, R, and Ray, S, (2003) introduce prior knowledge as one of the effective factors in the process of opportunity recognition. Shepherd, D.A and DeTienne, D.R, (2005) argue that individuals with prior knowledge are more likely to focus on the important aspects of existing information, and process it more efficiently, hence they have ability of identification of a greater number of opportunities. They presented that individuals with greater shares of prior knowledge about customer problems, identify more opportunities with higher degrees of innovation.

According to the study of Tang, J and Murphy, P.J., (2012), prior knowledge increases the likelihood of opportunity identification in the market system and improves service and product development. The results of this study on eight entrepreneurs revealed that the role of prior knowledge about the market and customer problems in opportunity recognition is significant. The difference in the application of prior knowledge depends on the type of opportunity generation process (Alsos, G.A & Kaikkonen, V, 2004). They believe that both opportunity perception and opportunity creation can be facilitated through prior knowledge. Arentz, J, Sautet, F, and Storr, V, (2013) presented that, there is a positive relationship between an individual's prior knowledge and entrepreneurial opportunity identification. The results of another study indicate that prior technology knowledge has a positive impact on the frequency of entrepreneurial opportunities recognition in the domain of technology (Marvel, M.R & Lumpkin, G.T, 2007). Shane, (2000) says that entrepreneurs only discover opportunities that pertain to their prior knowledge. He introduced prior knowledge as a "corridor" that allows individuals to pursue opportunities. In this study, he classified entrepreneurs' prior knowledge into three major dimensions of prior knowledge of markets, prior knowledge of ways to serve markets and prior knowledge of customer problems. The results from a case study of eight high technology companies by Shane (2000) discovered that market selection, ways to serve markets, solutions for customer problems all stand on the prior knowledge of entrepreneurs in all cases. Moreover, prior knowledge influenced the process of opportunity perception in all cases. The results from a case study of eight high- technology companies by Shane (2000) revealed that market selection, ways to serve markets, solutions for customer problems all bore on the prior knowledge of entrepreneurs in all cases. Furthermore, prior knowledge influenced the process of opportunity recognition in all cases:

*H1. Prior knowledge has a positive impact on entrepreneurial opportunity recognition.*

### **2.3. Entrepreneurial Alertness and Opportunity Recognition**

Many researchers have studied the role of entrepreneurial alertness in the process of opportunity recognition (Baron, 2006; Gaglio, C.M & Katz, J.A, 2001). Kirzner, (1979) introduced the concept of alertness to describe the way new opportunities are identified. He defined alertness as an individual's ability to identify opportunities that have been overlooked by others. Entrepreneurial alertness is an ability which can be investigated either as a cognitive feature or a conscious search behavior, for it increases the individual's awareness about his surrounding environment and access to information, and consequently leads him to

identify more opportunities. As a cognitive ability and an information- processing skill, entrepreneurial alertness allows people to acquire (scan and search for information), organize (associate and connect information) and interpret (evaluate and judge) information from different areas to aid him in recognizing opportunities (Gaglio and Katz, 2001). Therefore, alert individuals are aware of and sensitive to environmental change and its signs and have a greater likelihood of identifying opportunities. Ardichvili et al. (2003) state entrepreneurial alertness as one of the key factors in recognizing opportunities. According to the study of Ardichvili, and Cardozo, (2000), found that most entrepreneurs have a high level of alertness during the process of opportunity recognition. Research study shows that entrepreneurs are more alert than managers, since they are able to put their knowledge to different uses (Kaish and Gilad, 1991). In fact, using the information in different ways helps people consider various possible scenarios and situations, leading to recognition of more opportunities. Kaish and Gilad (1991) highlighted the importance of searching for new information and described alert individuals as those who are always ready to discover new opportunities by constantly scanning the surrounding environment. Puhakka, (2011), emphasized the positive role of entrepreneurial alertness in the recognition process of business opportunities. Tang, J, et al., (2012) claimed that entrepreneurial alertness increases the likelihood of launching a business-related activity. Their findings indicate that entrepreneurial alertness has a positive impact on innovation.

*H2. Entrepreneurial alertness has positive impact on entrepreneurial opportunity recognition.*

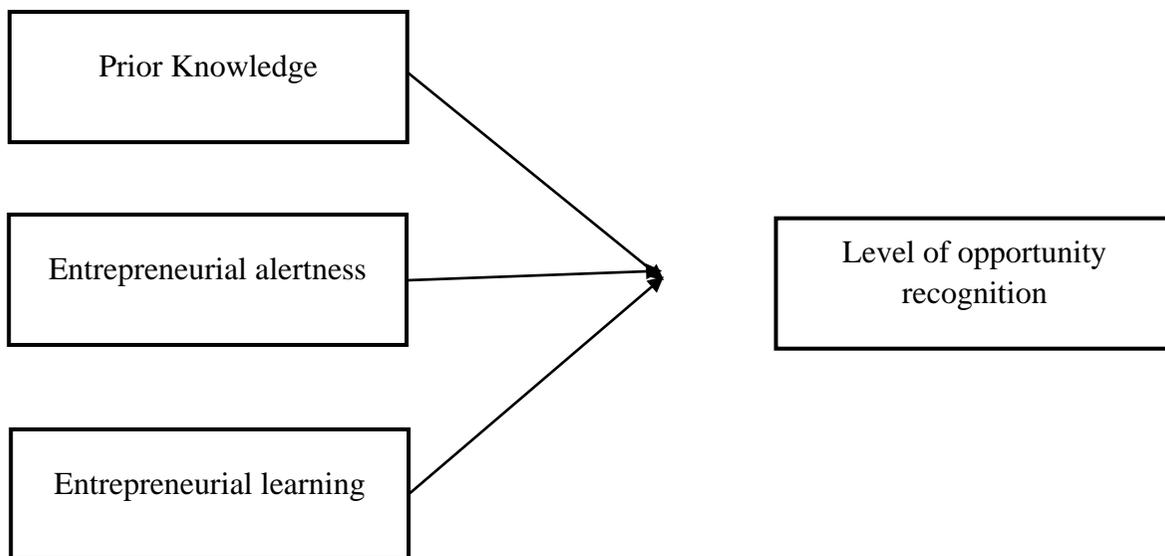
#### **2.4. Entrepreneurial learning and opportunity recognition**

Many researchers have highlighted the relationship between entrepreneurial learning and opportunity recognition in their studies. In this study, entrepreneurial learning is identified as one of the cognitive characteristics that helps entrepreneurs acquire new knowledge and use prior knowledge in order to identify opportunities (Shane and Venkataraman, 2000; Dimov, 2003; Corbett, 2007). According to Man, (2006), entrepreneurial learning is an ability and competency. In his framework, learning exceeds the quality of being alert to opportunities. Indeed, it is a kind of enthusiasm for learning, or gaining the required skills, experience, and knowledge, which finally help individuals in identifying opportunities. As entrepreneurs are obtaining knowledge through experimental learning and thereby search for new opportunities, the positive impact of entrepreneurial learning on opportunity recognition demonstrates its great importance in the process of gaining and transforming experience (experimental learning) in opportunity identification. According to Kolb's theory, learning is defined as a two-dimensional process which helps the individual to gain experience and information and transform them into new knowledge. This newly gained knowledge could be then engaged to facilitate opportunity identification. This experience-based approach to learning demonstrates a relationship between experimental learning theory and entrepreneurship (Corbett, 2005). Kolb, (1984) claimed that, the experimental learning process involves three distinct elements: existing knowledge; the process of acquiring knowledge and experience; the method of transforming acquired information and

experience into new knowledge. Corbett (2007) state that the individual’s learning style has an impact on recognition of entrepreneurial opportunities. In another study, Corbett (2005) says that at any stage of the entrepreneurial process a specific or different experimental learning style may prove effective. Furthermore he state that, different learning styles, as different methods of acquisition and processing experience, result in distinctive creation, evaluation and discovery of more entrepreneurial opportunities. Moreover, in another study by Politis, (2005), learning is described as a cognitive process in which the entrepreneurs’ work experience is transformed into entrepreneurial knowledge helping them in recognizing opportunities and coping with the liabilities of newness:

*H3. Entrepreneurial learning has a positive impact on entrepreneurial opportunity recognition.*

### 2.5. The Conceptual Model



### 03. METHEDODOLOGY

With regard to the research subject and its concepts, we small and medium scale entrepreneurs in Sri Lanka as the research population. Since most of the small and medium scale enterprises are located in the Western Province and the researchers could access them more easily, the entrepreneurs active in the Western Province were chosen as the research sample. The research utilized the simple random sampling method and a minimum sample size of 72 respondents was determined based on Cochran’s formula, with a 0.05 margin of error. The demographic characteristics of the respondents are as follows: in terms of gender, 65 percent male and 35 percent female.

In light of the quantitative nature of the research and the required data, the questionnaire instrument was used for data collection. The questionnaire was developed by combining and modifying several standard questionnaires. This questionnaire is divided into five parts with 57 items, in total. It uses the format of a

typical five-level Likert scale. The first part covers the demographic data; the second part deals with the items related to prior knowledge; the third part addresses the entrepreneurial learning items; the fourth part focusses on entrepreneurial alertness, and the final part includes the items related to opportunity recognition. The questionnaires were distributed among respondents (95 percent of the research population) either via e-mail or in person.

The Statistical Package for the Social Sciences (SPSS Version 20.0) is a statistical method for assessing the relationship between several variables in a model. To analyze the data, both descriptive and inferential statistics were used. Descriptive statistics summarize a set of sample observations. By using descriptive statistics the researcher is reporting in a form of frequencies, percentages means and standard deviations. Inferential techniques were used to determine relationships between variables and whether differences amongst the variables exist.

#### **04. DATA ANALYSIS**

The researcher has conducted exploratory analysis in SPSS 20 (Statistical Package for Social Sciences) in the study to test whether the data set is lined with outliers, univariate normality and multicollinearity. Prior to this, the researchers omitted all the missing values of the data set. And therefore as a protective step, researcher performed Series Mean function to exclude all the missing values of the data set. After that, the study moved to recognition and handling outliers of the study.

However, none of the dimension or the variable corresponded with significant deviations among the mean and the trimmed mean. Normality of continuous variables were tested by the skewness and kurtosis rule and the normal probability plot of the residuals. Furthermore, outliers were discovered employing stem and leaf diagram and the linearity was tested using bivariate scatter plot. Then testing for Multicollinearity was examined by Tolerance and Variance Inflation Factor values of the study. After that, autocorrelation was tested by Durbin-Watson value and Homoscedasticity was examined by residuals. Finally by using simple regression analysis and correlation analysis, hypothesis were tested.

##### **4.1. Descriptive Analysis**

Following table shows the mean values and standard deviation of the constructs that represents the prior knowledge, entrepreneurial alertness and entrepreneurial learning of the respondents and the opportunity recognition level of the respondents. Low mean values were gained for the independent variables and also dependent variable. From the results, mean value of 7.9349 on level of opportunity recognition shows that opportunity recognition level of the selected respondents is partially low which is poor. Moreover, according to the results, small entrepreneurs do not have high level of opportunity recognition level, and they do not have high level of prior knowledge, entrepreneurial alertness and also entrepreneurial learning, according to the low mean values.

**Table 01.**

<b>Construct</b>	<b>Mean</b>	<b>Std. Deviation</b>
Prior knowledge	9.2133	2.27389
Entrepreneurial alertness	11.5576	3.45481
Entrepreneurial learning	13.6491	1.98121
Level of opportunity recognition	7.9349	3.37868

#### **4.2. Correlation Analysis**

Correlation values were computed among all the variables to find out the relationship among the variables. Specifically, correlation analysis was conducted between the dependent variable ‘Level of opportunity recognition’ with the independent variables namely ‘prior knowledge’, ‘entrepreneurial alertness’ and also ‘entrepreneurial learning’. According to the correlational values of the SPSS output, statistical significant relationship is observed at the surface level. More in detail, it is observed that opportunity recognition level of entrepreneurs and prior knowledge, entrepreneurial alertness and also entrepreneurial learning are associated with a positive relationship suggesting a same direction. And association of each variables is statistically significant. Positive correlations were found between Small businesses’ opportunity recognition level, the dependent variable and the independent variables.

#### **4.3. Regression Analysis**

The main objective of the regression analysis is to find out the significant impact or influence of independent variable on the dependent variable. Hence, the researcher used multiple regression analysis to identify the significant determinants of the level of opportunity recognition of small businesses and to test the hypotheses stated above.

The analysis of the ordinary least square regression results of the model of the study is shown by following table, model summary. It shows the relationship between the dependent variable (opportunity recognition level of small and medium scale entrepreneurs) and independent variables (prior knowledge, entrepreneurial alertness and entrepreneurial learning) of the study. As per the table, a high level of model fit (81%) was observed with R<sup>2</sup> value. Besides, table 05, affirms the overall model fit of the study suggesting a significant P value which is 0.000. Thus the researcher postulates the 76.4% impact is in the significant level in the study. Further independent variables are statistically significant, (at 5% level) (0.000). Hence, researcher realized that, all the independent variables are statistical significance predictor variables of the opportunity recognition

level of the small ventures of the study. Nonetheless, positive beta coefficients of the independent variable mean that an increase of this variable bring about an increase in the dependent variable.

**Table 02.**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798 <sup>a</sup>	.817	.764	23.85675

a. Predictors: (Constant), prior knowledge, entrepreneurial alertness,entrepreneurial learning

b. Dependent Variable: Level of opportunity recognition

**Table 03.**

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	50009.33	8	7877.603	17.102	.000 <sup>b</sup>
1	Residual	101968.613	141	469.677		
	Total	151918.128	247			

a. Predictors: (Constant), prior knowledge, entrepreneurial alertness,entrepreneurial learning

b. Dependent Variable: Level of opportunity recognition

#### 4.4. Hypothesis Testing

Summary of data analysis is given below through hypothesis testing.

No	Hypothesis	Decision	Tool
H1	Prior knowledge has a positive impact on entrepreneurial opportunity recognition.	Accept	Regression
H2	Entrepreneurial alertness has positive impact on entrepreneurial opportunity recognition.	Accept	Regression
H3	Entrepreneurial learning has a positive impact on entrepreneurial opportunity recognition.	Accept	Regression

## 5. DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The present research study was conducted with the aim of offering and testing a comprehensive framework of effective factors in the process of entrepreneurial opportunities recognition. Therefore, we first reviewed the related literature in order to identify the key effective factors and then built the research framework based on the theory developed by Shane and Venkataraman (2000). Prior knowledge as measured by the four dimensions is the most thorough framework yet developed by researchers (Marvel and Lumpkin, 2007). It introduces cognitive characteristics as represented by entrepreneurial alertness and entrepreneurial learning as its key cognitive concepts in the fields of entrepreneurship and opportunity recognition (Tang et al., 2012; Corbett, 2007).

It should be noted that since these three effective factors exist and interact with each other simultaneously as individual characteristics of an entrepreneur, a separate study of each of them cannot lead to good and realistic results and it is essential to take into consideration the effects of these factors and their interactions at the same time. Findings show that the three proposed factors have a positive impact on entrepreneurial opportunity recognition. Entrepreneurs only discover opportunities that draw on their prior knowledge. We expected the direct impact of prior knowledge on opportunity recognition to be higher than was revealed in the results; however, based on previous analyses, another part of the variations in the dependent variables of opportunity recognition was explained by two effective cognitive factors. As a cognitive ability and an information-processing skill, entrepreneurial alertness allows one to, organize and interpret information from different areas to aid him in recognizing opportunities (Gaglio and Katz, 2001; Tang et al., 2012). Therefore, alert individuals are aware of and sensitive to environmental change and its signs and have a greater likelihood of identifying opportunities. The confirmed positive impact of entrepreneurial alertness on opportunity recognition is in line with findings from other studies (Tang et al., 2012).

By combining several theories, this study developed an innovative, comprehensive and integrated findings which can considerably help in understanding who and why some people are able to recognize more opportunities. The results showed that the key factors such as prior knowledge, entrepreneurial alertness, entrepreneurial learning have a significant effect on opportunity recognition not only in theory but also in reality. By considering the role of these effective factors, entrepreneurs will be able to discover more opportunities and by consequently launching a new business based on those opportunities, contribute to economic growth and employment. Given the importance of prior knowledge, entrepreneurs should continuously seek to develop their prior knowledge and experience in different areas. So that they could enhance entrepreneurial alertness and learning, and thereby improving their opportunity recognition skill. Based on the study results, it was found that it is better for individuals who seek to launch a new business to consider areas in which they have prior knowledge and experience, as this could serve them in identifying opportunities. Furthermore, by being alert about their environment and its pertaining information and by

trying to acquire new knowledge and experience through learning, entrepreneurs would be able to discover more potential opportunities.

There are few limitations in the study and recommendations for future researchers. The most important limitation of this study is its small sample size. This limitation should be considered when generalizing the results. Since the main focus of this study was to determine the effects of prior knowledge and cognitive characteristics including entrepreneurial alertness and entrepreneurial learning; ignoring the effects of other cognitive characteristics may have reduced the accuracy of the findings. On the other hand, opportunity recognition as the dependent variable was measured and analyzed solely based on the number of identified opportunities regardless of their value or innovativeness. Therefore, it is difficult to claim with certainty that these effective factors would assuredly conduce to recognition of profitable entrepreneurial opportunities. Hence, we believe that future research in the field of entrepreneurial learning in the process of entrepreneurship could serve as a valuable subject of study in light of opportunity recognition or opportunity exploitation dimensions. Since the type and amount of prior knowledge varies with different entrepreneurs in different industries, it is recommended that comparative studies with a similar framework in different industrial domains be conducted in order to evaluate and compare the possible differences concerning the role and impact of prior knowledge on the process of opportunity recognition.

## References

- Ali Hajizadeh & Mohammadreza Zali, 2016. Prior knowledge, cognitive characteristics and opportunity recognition. *International Journal of Entrepreneurial Behavior & Research*, pp. 63-83.
- Alsos, G.A & Kaikkonen, V, 2004. Opportunities and prior knowledge: a study of experienced entrepreneurs. *Frontiers of Entrepreneurship Research*, pp. 301-314.
- Ardichvili, A & Cardozo, R.N, 2000. A model of the entrepreneurial opportunity recognition process. *Journal of Enterprising Culture*, 8(2), pp. 103-119.
- Ardichvili, A., Richard Cardozo & Sourav Ray, 2003. A theory of entrepreneurial opportunity identification and Development. *Journal of Business Venturing*, pp. 105-123.
- Arentz, J, Sautet, F & Storr, V, 2013. Prior-knowledge and opportunity identification. *Small Business Economics*, pp. 461-478.
- Baron, R., 2006. Opportunity recognition as pattern recognition: how entrepreneurs 'connect the dots' to identify new business opportunities. *The Academy of Management perspectives*, pp. 104-119.
- Baron, R. A., 2004. The cognitive perspective: a valuable tool for answering entrepreneurship's basic "why" questions. *Journal of business venturing*, pp. 221-239.
- Bhave, M., 1994. A process model of entrepreneurial venture creation. *J. Bus. Venturing* , p. 223 – 242.
- Charles Vance, Deone Zell & Kevin Groves, 2008. Considering individual linear/nonlinear thinking style and innovative corporate culture. *International Journal of Organizational Analysis*, pp. 232-248.

- Corbett, A., 2005. Experiential learning within the process of opportunity identification and exploitation. *Entrepreneurship Theory and Practice*, 29(4), pp. 473-491.
- Corbett, A., 2007. Learning asymmetries and the discovery of entrepreneurial opportunities. *Journal of Business Venturing*, 22(1), pp. 97-118.
- Dane, E & Pratt, M.G, 2006. Exploring intuition and its role in managerial decision-making. *Academy of Management Review (in press)*.
- Davidsson, P., 1989. Continued entrepreneurship and small firm growth. Doctoral dissertation. *Stockholm. Stockholm School of Economics*.
- De Koning, A., 1999. Conceptualizing Opportunity Recognition as a Socio-Cognitive Process. *Centre for Advanced Studies in Leadership, Stockholm*.
- Dimov, D., 2003. The nexus of individual and opportunity: opportunity recognition as a learning process. *Frontiers of Entrepreneurship Research, Babson College, Wellesley, MA*.
- Dimov, D., 2007. Beyond the single person, single- insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice*, 31(5), pp. 713-731.
- Dimov, D., 2007. From opportunity insight to opportunity intention: the importance of persistence learning match. *Entrepreneurship Theory and Practice*, 31(4), pp. 561-583.
- Drucker, P., 1909. [Online].
- Emanuela Prandelli, Martina Pasquini & Gianmario Verona, 2016. In User's Shoes: An empermental Design on the role of perspective taking in discovering entrepreneurial opportunities. *Journal of Business Venturing*, pp. 287-301.
- Evans, J. S. B. T., 2008. Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition. *The Annual Review of Psychology*, pp. 255-278.
- Fiet, J., 2007. Information basis of entrepreneurial discovery. *Small Business Economics*, pp. 419-30.
- Gaglio, C.M & Katz, J.A, 2001. The psychological basis of opportunity identification: entrepreneurial alertness. *Small Business Economics*, 16(2), pp. 95-111.
- Gaglio, C., 1997. Opportunity identification: review, critique, and suggested research directions. *Katz, J. and Brockhaus, B. (Eds), Advances in Entrepreneurship, Firm Emergence, and Growth, Vol. 3, JAI Press, Greenwich, CT, pp. ., pp. 139-202*.
- Gamage, A. S., 2003. SMALL AND MEDIUM ENTERPRISE DEVELOPMENT IN SRI LANKA:A Review. pp. 133-150.
- Ghinea, G & Chen, S, 2003. The impact of cognitive styles on perceptual distributed multimedia quality. *British Journal of Educational Technology*, pp. 393-406.
- Hills, G, Lumpkin, G.T & Singh, R.P, 1997. Opportunity recognition: perceptions and behaviors of entrepreneurs. *Frontiers of Entrepreneurship Research. Babson College, Wellesley, MA*, p. 203–218.
- Holmstrom, B., 1989. Agency costs and innovation. *Journal of Economic Behavior and Organization*, pp. 305-27.
- Kaish, S & Gilad, B, 1991. Characteristics of opportunities search of entrepreneurs versus executives: sources, interests, general alertness. *Journal of Business Venturing*, pp. 45-61.

- Kirzner, I., 1979. Perception, Opportunity, and Profit: Studies in the Theory of Entrepreneurship. *University of Chicago Press, Chicago, IL.*
- Kirzner, I., 1997. Entrepreneurial discovery and the competitive market process: an Austrian approach. *Journal of Economics Literature*, pp. 60-85.
- Kolb, D., 1984. Experiential Learning: Experience as the Source of Learning and Development. *Prentice Hall, Englewood Cliffs, NJ.*
- Krueger, N.F & Brazeal, D.V, 1994. Entrepreneurial potential and potential entrepreneurs. *Entrepreneurship: Theory & Practice*, pp. 91-104.
- Krueger, N., 1993. The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrepreneurship. Theory & Practice*, p. 5–21.
- Man, T., 2006. Exploring the behavioural patterns of entrepreneurial learning: a competency approach. *Education+Training*, 48(5), pp. 309-321.
- Marvel, M.R & Lumpkin, G.T, 2007. Technology entrepreneurs' human capital and its effects on innovation radicalness. *Entrepreneurship Theory and Practice*, pp. 807-828.
- Mayer, R. E., 1992. *Thinking, problem solving, cognition*. New York: Freeman.
- Murphy, P., 2011. A 2 × 2 conceptual foundation for entrepreneurial discovery theory. *Entrepreneurship Theory and Practice*, pp. 359-74.
- Politis, D., 2005. The process of entrepreneurial learning: a conceptual framework. *Entrepreneurship Theory and Practice*, 29(4), pp. 399-424.
- Puhakka, V., 2011. Developing a creative-cognitive model of entrepreneurial alertness to business opportunities. *Journal of Management and Strategy*, 2(4), pp. 85-91.
- Quan, X., 2012. Prior experience, social network, and levels of entrepreneurial intentions. *Management Research Review*, pp. 945-957.
- Rieple, A., 2004. Understanding why your new design ideas get blocked. *Design Management Review*, pp. 36-42.
- Ripsas, S., 1998. Towards an interdisciplinary theory of entrepreneurship. *Small Business Economics*, pp. 103-15.
- Schumpeter, J., 1942. *Capitalism, Socialism, and Democracy*. New York, NY. : Harper & Brothers.
- Shane, S & Venkataraman, S, 2000. The promise of entrepreneurship as a field of research. *Academy of Management Review*, pp. 217-26.
- Shane, S., 1999. Prior knowledge and the discovery of entrepreneurial opportunities. *Organ. Sci*, p. 448–469.
- Shane, S., 2003. A General Theory of Entrepreneurship: The Individual-Opportunity Nexus. *Edward Elgar Publishing, Cheltenham*.
- Shepherd, D.A & DeTienne, D.R, 2005. Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship Theory and Practice*, pp. 91-112.
- Shepherd, D.A & DeTienne, D.R, 2005. Prior knowledge, potential financial reward, and opportunity identification. *Entrepreneurship Theory and Practice*, 29(1), pp. 91-112.

- Shepherd, D., 2015. Party On! A call for entrepreneurship research that is more interactive, activity based, cognitive hot, compassionate, and prosocial. *Journal of Business Venturing*, pp. 489-507.
- Shook, C, Priem, R & McGee, J, 2003. Venture creation and the enterprising individual: a review and synthesis. *Journal of Management*, pp. 379-99.
- Sigrist, B., 1999. Entrepreneurial opportunity recognition. *A presentation at the Annual UIC/AMA symposium at Marketing/Entrepreneurship Interface, Sofia-Antipolis, France.*
- Simon, M, Houghton, S. M & Aquino, K, 2000. Cognitive biases, risk perception, and venture formation: how individual decide to start companies. *Journal of business venturing*, p. 113–134.
- Simonton, D. K., 1999. *Origins of Genius: Darwinian Perspective of Creativity. s.l. s.l.:Oxford University Press.*
- Singh, R, Hills, H & Lumpkin, G.T, 1999. Examining the role of self-perceived entrepreneurial alertness in the opportunity recognition process.. *Presented at the 13th UIC/AMA Symposium on Marketing and Entrepreneurship Interface, Nice, June.*
- Sternberg, R., 1997. *Thinking Styles.* New York, NY: Cambridge University Press.
- Tang, J, Kacmar, M & Busenitz, L, 2012. Alertness in the pursuit of new opportunities. *Journal of Business Venturing*, 27(1), pp. 77-94.
- Tang, J & Murphy, P.J., 2012. Prior knowledge and new product and service introductions by entrepreneurial firms: the mediating role of technological innovation. *Journal of Small Business Management*, pp. 41-62.
- Teach, R.D, Schwartz, R.G. & Tarpley, F.A, 1989. The recognition and exploitation of opportunity in the software industry: a study of surviving firms. *Frontiers of Entrepreneurship Research*, 3(1), pp. 383-397.
- Tian Li & Veronica Gustafsson, 2012. Nascent entrepreneurs in China: social class identity, prior experience affiliation and identification of innovative opportunity: A study based on the Chinese Panel Study of Entrepreneurial Dynamics (CPSED) project. *Chinese Management Studies*, pp. 14-35.
- Ucbasaran, D, Westhead, P & Wright, M, 2009. The extent and nature of opportunity identification by experienced entrepreneurs. *Journal of business venturing*, pp. 99-115.
- Venkataraman, S., 1997. The distinctive domain of entrepreneurship research: an editor's perspective. *in Katz, J. and Brockhaus, R. (Eds), Advances in Entrepreneurship, Firm Emergence, and Growth, Vol. 3, JAI Press, Greenwich, CT, pp. 119-38.*