Startup Entrepreneurial Creativity and Impact in Armenia: Case Study (2015–2018)

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Abstract
The entrepreneurial creativity (EC) is an important factor for measuring the health and the well-being of the entrepreneurial ecosystem in any country. The purpose of our study was to examine the status of the Armenia’s entrepreneurial ecosystem through entrepreneurial creativity (EC) framework. The ‘Entrepreneurial Creativity and Growth’ (EC&G) model developed by Petrakis and Kafka (2016) was adopted. This model puts forward seven factors affecting the entrepreneurial creativity (EC), therefore, no other factor outside this framework was considered. Partial least square (PLS) methodology was applied to construct a predictive model of the seven factors dependencies on the (EC) and on each other. To increase granularity of the model, two to four sub-factors were constructed for each factor sufficient to affect the main dependent variable, the EC. Only two of the factors ‘Culture and Personal Characteristics of the entrepreneurs’ \((p = 0.001)\) and the ‘Availability of Relevant Institutions’ \((p = 0.007)\) were shown to have significant effect on the EC. The ‘Culture and Personality’ of entrepreneurs was significantly and positively correlated to the EC \((b = 0.444)\), which indicated that flexibility and risk-taking is the highest characteristics of Armenia’s entrepreneurs; thus, more creative. This article reports these findings and more of a study aimed at analysing the EC among the Armenian startup founders who established businesses within the years 2015–2018.

Keywords
Entrepreneurship, entrepreneurial creativity, entrepreneurial ecosystem, entrepreneurial mindset, startup

Disclaimer: This study was the first in its kind and was conducted as partial fulfilment for the Master of Science in Strategic Management at the American University of Armenia.

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Introduction

Startups are at the heart of entrepreneurship and entrepreneurs as innovators of startups ensure sustainability and growth of the business ecosystem of a country. Several studies (Cliffs, 1989; Puhakka, 2012) showed that creative thinking is vital for entrepreneurs to ensure the successful development of startup creation. It affects the unique value proposition, business processes, the company’s ability to innovate and produce new solutions over a long period of time.

Entrepreneurship, according to Drucker (1986) is a behaviour rather than a personality trait that needs to be systematic, managed and based on purposeful innovation. Kao (1989) defined entrepreneurship as a combination of value creation, business opportunity and risk management for successful project completion. Amabile (1997) introduced the terminology of Entrepreneurial Creativity (EC) (Note: from now the entrepreneurial creativity will be noted as EC) and defined it as the collection and realization of game-changing and relevant ideas to establish and grow a new business. Fillis and Rentschler (2010) defined entrepreneurship as ‘the process of creating value for businesses and social communities’.

Creativity, on the other hand, has been very hard and paradoxical to define. According to Fillis and Rentschler (2010), Creativity is defined as any physical or conceptual output that differs from the norm or the status quo. He also stated that innovation is the path through which creative ideas cascade down to a profitable conclusion. Therefore, we can define Innovation as creativity in an application; giving an entrepreneurial touch to creativity.

From the above definitions, hence, it is possible to infer that EC is a process of looking for, and exploiting opportunities systematically, through effective resource management to create value for businesses and societies. Also, EC is not merely a personal trait given by nature; it is something that can be acquired and nurtured. This definition of EC has served as the backbone and the main criterion when determining the qualified startup population used in the research.

Petrakis and Kafka (2016) developed a model known as the ‘Entrepreneurial Creativity and Growth’ model (EC&G model). This model is based on seven factors through which EC can be analysed. The seven factors are Education and Knowledge, Management of Disruptive Technologies, Spillover Creativity, Cultural Background and Personal Characteristics of an individual, Motives and Incentives to found a New Business, Management of Resources and Institutional Presence within the Country.

In 2018, Armenia’s startup market had just started to grow; we undertook this research to study Armenia’s entrepreneurial creativity within its start-up industry development. In this article, we attempted to evaluate Armenia’s startup entrepreneurial mindset—creativity and innovativeness of the entrepreneurs using Pettrakis and Kafka (2016) EC&G model. The startups included in our research were founded locally in the years 2015–2018. Data collection for this study was performed based on a market analysis of a three-months period during summer 2018 through survey questionnaires prepared by us and served on entrepreneurs using the Google online platform. The results of our study are shown in the subsequent sections below. However, before presenting our results, we wish to
comment on the approach and research methodology undertaken to obtain the data.

Since the completion of this work, parts of our work have been presented in local meetings and conferences (Keshishyan et al., 2018, 2019) without formal publications. Also, much has changed in the local startup market of Armenia as more startups have emerged. However, in this study, we confined ourselves to presenting the research analysis performed on the first generation of the startups - those formed between 2015 and 2018.

**Research Methodology**

This research was an empirical study through a survey questionnaire conducted in summer 2018 among 55 local startup entrepreneurs within Armenia. The questionnaire was prepared based on Petrakis and Kafka (2016) seven factors EC&G model. The seven factors served as core variables when evaluating the startup founders’ EC. To evaluate EC, each factor was divided into sub-factors. The sub-factors were derived from the following references (Adner, 2006, 2016; GEM, 2014, 2016, 2018; Griffin et al., 2010; Kao, 1989; Kerr et al., 2018).

**Measurement Development and Methodology**

Based on the seven factors of Petrakis and Kafka (2016) EC&G model, seven alternative hypotheses were developed. The null hypothesis ($H_0$) assumed that the EC mindset of local startups cannot be explained by Petrakis and Kafka (2016) EC&G model. Therefore, none of the seven factors affect the EC, hence, rejecting $H_0$, and evaluating the strength of each factor on the EC is the purpose of this study. Table 1 lists the alternative hypothesis for each of the factors affecting the EC.

To analyse dependencies and variability of the seven factors of the EC&G model on a more granular level, PLS methodology was applied in SmartPLS software environment (SmartPLS is a user-friendly software that enables running the regression model with a greater ease and precision, as well as, provides visual elements to contribute to the analysis).

| Alternative Hypothesis | The 7 Factors Affecting EC |
|-------------------------|----------------------------|
| H1                      | Entrepreneurs’ Culture and Personality |
| H2                      | Entrepreneurs’ Ability to Manage Disruptive Technologies |
| H3                      | Entrepreneurs’ Education and Knowledge |
| H4                      | Entrepreneurs’ Resource Management Capability |
| H5                      | Entrepreneurs’ Motives and Incentives to found a startup |
| H6                      | Institutional Availability |
| H7                      | The country’s/region’s Creativity Spillover |

Source: The authors.
Figure 1. Schematic Representation of the Factors (as Constructs) in the SmartPLS Environment

Source: The authors.

Table 2. The List of All Formulated Sub-factors for Each Factor of Petrakis EC&G Model

| Factors                              | Formulated Subfactors                                                                 |
|--------------------------------------|--------------------------------------------------------------------------------------|
| Dependent Variable (EC)              | Level of entrepreneurs’ decisiveness                                               |
|                                      | Level of determination                                                             |
|                                      | Reasons for founding a startup                                                     |
| Entrepreneur’s Cultural               | Individual’s risk-propensity                                                        |
| Background and Personal               | Entrepreneurial resilience                                                          |
| Characteristics                      |                                                                                     |
| Managing Disruptive Technologies     | Tech-saviness (ease of using advanced technologies)”                                |
| Spillover of Creativity in the       | Use of advanced technologies in a product/service                                   |
| startup ecosystem                     | Usage of creativity tools within the startup                                        |
|                                      | Presence of supporting ecosystem items nurturing EC in the country                  |
| Entrepreneur’s Education and Knowledge| Field of educational background that contributed to the development of startups     |
|                                      | Skills needed to launch and manage a startup                                        |
| Entrepreneurs’ Motives and Incentives| Person’s daily source of motivation (intrinsic or extrinsic)                        |
|                                      | Incentives to start a new business                                                  |
|                                      | Level of desire to respond immediately to the needs (both personal and non-personal)|
| Entrepreneur’s Capability to Manage  | Methods implemented to bring in more funds into startups                            |
| Resources                            | Means to improve and optimize startup operations                                     |
| Availability and Effectiveness of     | Presence of incubator/accelerator programs                                          |
| Relevant Institutions                 | Startup-related education public events                                             |
|                                      | Workspaces to support innovative thinking                                          |
|                                      | Literature available in the local language                                          |

Source: The authors.
Figure 1 shows the schematic representation of the seven factors within the SmartPLS environment fitted to a quantitative modelling illustrating the relationship between each of the factors and the EC, which is the dependent variable. In SmartPLS, the factors are known as constructs, and the sub-factors are known as items. However, in this article, the nomenclature of ‘factor and sub-factor’ will be used instead of ‘construct and items’.

The PLS is a method for constructing predictive model when factors are many and highly collinear. Thus, to increase the granularity, for each of the EC&G seven factors, two to four sub-factors were constructed sufficient to affect the main dependent variable, the EC. The purpose was to (a) study the correlation and effectiveness of each of the seven factors on the EC directly, for example, the effect of ‘Entrepreneur’s Cultural Background and Personal Characteristics’ on the EC, (b) study the correlation and effectiveness of each of the seven factors on each other, for example, the ‘Culture and Personality’ effect on ‘Relevant Institutions’ and (c) generate predictive modelling between all sub-factors characterizing each individual factor. The list of all constructed sub-factors for each of the factors of Petrakis EC&G model is shown below in Table 2.

In this article, we will present the predictive modelling results and analysis of part (a) only, that is, showing the results of the correlations and effectiveness between each of the seven factors and the EC, while leaving the results obtained for the work performed on parts (b) and (c) for future publications.

**Research Population, Sampling Techniques and Research Design**

The population of this research study comprised those local entrepreneurs who founded startups within the years 2015–2018. The exact government registered official population size of the startups for years 2015–2018 was not possible to obtain. Therefore, the estimated population size has been derived from reports provided by the current incubator/accelerator programs in Armenia, and statistical reports on the number of sole entrepreneurs provided by the Statistical Committee of the Republic of Armenia.

At the time of this study, Armenia’s startup ecosystem was at its infancy (only 3 years old) and was just getting formulated. There were only two to three incubators and only one accelerator program in the country. The entrepreneurial ecosystem consisted of startups founded and grown through the local small incubator/accelerator programs, as well as those small businesses that were launched by serial entrepreneurs. Therefore, this study was able to cover only the first generation startups created locally.

A non-probability convenience sampling approach was used to contact the participants of the incubator/accelerator programmes. The convenience was determined by the availability of entrepreneurs’ contacts, as well as their willingness to participate in the research. Secondly, a snowball (referral) sampling approach was used to contact entrepreneurs who had not been part of any incubator/accelerator program. The sampling has been implemented with the help of Facebook and LinkedIn referral algorithms and professional networks. The sample size of this study was 55.
An online survey questionnaire was also designed to collect the data. The questionnaire was based on the sub-factors attributes on all the seven factors as well as the main dependent variable, the EC. The respondents were asked to answer on the 1–5 Likert scale, 1 being the lowest and 5 being the highest.

Results and Discussion

Path coefficient (\(b\)) and \(p\)-value (\(p\)) from the PLS method were used to represent the correlation and causality or the significance of the correlated variables. The sign of the coefficients indicated direct or inverse correlation between the variables. The \(p\)-value of <0.05 indicated a rejection of the null hypothesis (\(H_0\)), that is, there was a significant effect between a single factor and the EC. The smaller \(p\)-value meant stronger the causality between the variables. \(R\)-squared value determined the proportion of the dependent variable, the EC that can be explained by the independent variables, the seven factors in this case.

Figure 2 illustrates the results of the structural path analysis (\(b(p)\)) as modelled in SmartPLS. The paths represented direct links between the seven factors and the EC. The significance level of the paths was established during 5000 bootstrap runs, with an \(R\)-squared value of 46.6 per cent (due to a sample size of 55 which was considered somewhat small). The results of (\(b(p)\)) values assigned on the paths of each factor, are shown in Figure 2.

The numbers above and below the constructs in Figure 2 represent the path coefficient and causality of the constructs on the EC. The summarized list of (\(b(p)\)) is shown in Table 3.

Table 3 and Figure 2 show clearly, at the time of this study, only two of the factors ‘Culture and Personal Characteristics of the entrepreneurs’ (\(p = 0.001\)) and the ‘Availability of Relevant Institutions’ (\(p = 0.007\)) were shown to have significant effect on the EC. These findings validate the hypotheses \(H_1\) and \(H_6\) of (Table 1). The ‘Culture and Personality’ of entrepreneurs was significantly and positively correlated to the EC (\(b = 0.444\)), which indicated that flexible and risk-taking entrepreneurs were more creative. Whereas the ‘Availability of Relevant Institutions’ was weakly and negatively correlated to the EC (\(b = –0.361\)), which indicated the lack of well-established institutions as a detriment to the entrepreneurial creative mindset. The negative sign meant that these institutions were not being utilized to their fullest yet. Along with institutions per se, there was limited availability of relevant entrepreneurial literature in native Armenian language and founders rely on speakers to mentor them, which meant the entrepreneurs were not able to fully utilize the available resources to develop entrepreneurial creative mindset.

As for the rest of the factors our model indicated that at the point of our study these factors, regardless of their correlation sign, had weak to very weak effect on the EC, and hence failed to reject (\(H_0\)).

Spillover Creativity had very weak negative correlation (\(b = –0.002\)) with the EC, which meant that, there were not many opportunities to share ideas with peers.
Knowledge and Educational Background of the entrepreneur had very weak positive correlation \((b = 0.089)\) with the EC, this meant that there were few case studies about local startups worthy of studying and investigation.

Ability to Manage Disruptive Technologies show weak positive correlation \((b = 0.297)\) with the EC, which meant there were not many startups implementing and producing new technologies.

Entrepreneur’s Ability to Manage Resources had a very weak negative correlation \((b = -0.08)\) with the EC that meant the entrepreneurs did not have a full skillset to exploit all the resources available. Hence, the startup management practices were not fully developed and acquired.

Motives and Incentives of Startup Entrepreneurs had weak negative correlation \((b = -0.235)\) with the EC, which meant at the point of our study, the startup founders needed to learn how to internalize their motivation of founding and running a new venture to make sure they go an extra mile with sustainable energy.
Conclusion and Theoretical Contribution

The EC of an entrepreneur is an important factor to evaluate the development of startups (Amabile, 1997). It helps the entrepreneur find, evaluate, transform and use opportunities and resources with a goal to create economic value, that is, start and grow a business.

Utilizing the seven building blocks of the EC as suggested by Petrakis and Kafka (2016) ‘Entrepreneurial Creativity and Growth’ model and analysing the responses of 55 startup founders through the SmartPLS, it became pellucid that the entrepreneurial creativity of Armenia’s local startup founders and entrepreneurs was affected by two major factors: (a) the person’s Cultural Background and Personal Characteristics and (b) the Availability of Relevant Institutions within the Country. The rest of the factors required development in order to start having a tangible and positive effect on the EC.

Developing and utilizing several (two to four) sub-factors for each of the seven factors affecting the entrepreneurial creativity, has provided deeper insight and understanding of the root cause of the status of Armenia’s EC.

Limitations and Future Research Direction

The 3 months’ time period limitations for this study have prevented us expanding our research to a larger population sample size. The $R^2$ value of 46.6 per cent which was lower than 50 per cent was expected for a sample population size of 55.

For future research, it is vital to scope the sample frame and reserve a longer-period of time for data collection and analysis. To ensure a higher $R^2$ value for the regression analysis, the sample size should be bigger than 100, aiming at 95 per cent confidence interval.

Declaration of Conflicting Interests

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