



A STUDY ON THE EFFECT OF SYSTEMIC ELEMENTS OF ENTREPRENEURIAL ECOSYSTEM ON STARTUP SUCCESS WITHIN DISCOVERY STAGE

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ABSTRACT

This study has investigated the effect of systemic elements of entrepreneurial ecosystem on startup success within discovery stage. In this research, after discussion of literature and consideration of theoretical bases, shaping of hypothesis is considered in terms of literature. Data were collected by questionnaire method and analyzed by multiple variable and SPSS@22.0, AMOS 22.0. Researches on startups were performed in Iran and in three growth and innovations centers in universities and the results confirmed that role of startups success factors are key and important in different degrees. The effect of the three most important factors affecting the success of a startup in its discovery stage belong to finance, talent and knowledge, and leadership. Leadership not only plays a crucial role but also a key to wrapping up all the networks through which financing, talent, knowledge and support systems can benefit a startup.

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1. INTRODUCTION

At present, shortage and slight researches are on scientific dimensions of ecosystem that facilitates entrepreneurship activities on innovation and help dynamisms of entrepreneurship environment. Researches on personal elements of ecosystem have accelerated and considered more facilities by writers who discussed it (network and knowledge) other players (skill and leadership). This concentration point emphasizes on more inclination of elements especially their role in general structure. Therefore, the researches which are on dynamic evaluation and communicational strength and the effect of performance can be neglected, because of it, Mack and Mayer (2016) stated that many studies are not flexible and based on past and concentrated on past successful ecosystems and at sum, it needs continuous and explicit studies to comprehend phenomenon to respond communications between entrepreneurship ecosystem and successful startup.

Previous literature for international and global business recognize importance of network relationship as necessary facilitators for global entrepreneurship (Coviello and Munro, 1997; Coviello, 2015; Torkkeli et al., 2012). Now, they are related with B2B, organizational network or personal network. Thus, based on knowledge, there is no previous studies which help to explain role of ecosystem in successful startup in Iran. This is contrasted with scientists like Zander et al. (2015) who advised that ecosystem view is a lens which evaluates new business and startup. Therefore, the questions which are responded by evaluation of ecosystem elements are as follows:

1. Which systematic element play more important role in successful startup in discovery stage?
2. What is scale of effect of systematic elements in startup ecosystem on successful of startup within discovery stage?

2. LITERATURE

Conceptual ideas on entrepreneurship ecosystem were so much during past 20 years (Spilling, 1996, Van de Ven, 1993) but growing concentration helped more to expand literature in this field (Acs et al., 2013). In one side, entrepreneurship is defined by process which is exploration, confirmation, evaluation and extraction and use opportunities to create services and commodities (McDougall and Brown, 2014; Shane, 2000). Generally, based on Schumpeter (1961), entrepreneurship consists of new commercial opportunities and have positive effect on view and insight of risk that created to use opportunities (Zhang, 2015). Entrepreneurship ecosystem constrains entrepreneurship to dangerous tasks which is considered as vital source for innovation, production (Foster et al, 2013, Mason and Harrison, 1996).

2.1 STARTUP SUCCESS

Success of startup is under influenced on different situations and parameters (Gelderen et al., 2015). But, according to researches which are don on success of startups, successful fields of startup are dependent on factors which warrant their success somewhat (Boschma, 2005). Within discovery stage, startups have special terms which discriminate them from counterparts (Davis and Eisenhardt, 2011). According to special condition of country and especially Tehran, one can evaluate startups with different indicators and in this research, parameters are estimated by five graduated in the field of management and business and five experts of startup ecosystem and finally, five indicators confirmed in discovery stage which are used in questionnaire.

2.2 LEADERSHIP

Cohen and Hochberg (2014) argued that every fruitful entrepreneurial ecosystem tends to have at least one or more successful entrepreneurial leader who becomes a powerful source of inspiration in the eyes of his or her peers. Successful entrepreneurs with a proven track record and economic independence can continue their entrepreneurial activities by inspiring and advising others based on their expertise and by investing their time and money. These ‘venture junkies’ can become serial entrepreneurs, mentors, board members, angel investors and venture capitalists. This cyclical process is called ‘entrepreneurial recycling’ (Bahrami and Evans, 1995; Mason and Harrison, 1996). Hence, it is proposed that: H1: Leadership has effect on startup success within the discovery stage.

2.3 FINANCE

Entrepreneurship finance is a domain of research which concentrates on dangerous business and manner of obtaining financial capitals. By consideration of internal factors of ecosystem, it is

recognized that the entrepreneurs recognize opportunities that result to value (Burgelman and Hitt, 2007) and create financial capital as basic resource to success. Therefore, most part of discussion is on strong and power entrepreneurship. Many developed firms and institutes have not suitable capital to open independent store and have more risks for official lenders, thus, they reach capital as family, friends and unofficial resources. Wu et al. (2016) stated that for unofficial debt like first transaction costs, capital decisions are taking so that there is less bureaucracy and no warrantee.

In other side, official assets show financial resource from dangerous capital, investors, investment companies and investor's persons and they create expanded network to access market, communications and credit of customers and potential domestic and foreign partners. Wong study 2009 showed that business angels don't control on control mechanisms like dangers investors but they use unofficial methods more. It seems that business angels provide a bridge for investment so that organization are ready for investment and other investments methods like mass finance (Mollick, 2014) and personal discovery (Harrison et al., 2004) are considered. Thus, one can suggest that H2 is effective on success of startups.

2.4 SKILLS

Access to skill in business and its success is so vital, thus, skill influences on ecosystem of entrepreneurship significantly (Kline and Santos, 2010, Thomas et al., 2015). As well, Lee et al., 2014 explained that skillful persons are basic forces in business and have more variety in environments. The regions where have high skill, more attractive staff to follow new challenges and more wealth for successful of startups (Bahrami and Evans, 1995; Kline and Santos, 2010). This procedure created vast source for skills in all sections and fields (Feld, 2012). It is so vital to have an open and potential environment to discover dangerous business (Thomas et al., 2015), as without force works potential entrepreneurs transmit to attractive environments to register companies (Thomas et al., 2015) therefore, to be available influences on entrepreneurship ecosystem and develop them significantly (Foster et al., 2013).

2.5 KNOWLEDGE

Access to knowledge has become a fairly important endowment for innovative ventures that are strapped for resources from their very inception (Oviatt and McDougall, 2005) and cannot by themselves develop essential new knowledge. Thus, new ventures capture knowledge spillovers by externally screening for innovations. From the entrepreneurial perspective, entrepreneurs recognize the opportunities for exploiting spillovers and thus create new ventures to convert this exposed knowledge into economic knowledge. This, in turn, enables entry into new markets and creates value for the entire economy in the long run (Acs et al., 2013).

As knowledge and talent are interconnected and could be mutually affected, after having consulted and interviewed 10 doctoral graduates in business and 10 entrepreneurial ecosystem actives, it has been concluded that is better to consider them under one construct called "talent and knowledge" as they can cover the aspects missed in one by the other party. Hence, it is proposed that: H3: Talent and knowledge has effect on startup success within the discovery stage.

2.6 SUPPORT SYSTEMS

Entrepreneurs need many resources for growth and discover their startups so that the companies

which are on first steps, are dependent on resources (Knight 2004) and need support to access in their life style. Therefore, new dangerous business has inclination to accumulate in a specified place where the resources are available and are cheap because of applied bases (Feld, 2012). Generally, researchers study providers of services (legal and accounting ports) and intermediaries (incubators and accelerators) but concentrate less on networking (commercial society, graduated) and involvements networks all help to reduce barriers in business and offering to market (Zhang and Li, 2010).

Bahrami and Evans, 1995 stated that service infrastructure allowed startups to concentrate on their specialty field instead of vast activity. This means the entrepreneurs shall concentrate on their main activity and outsource to providers. As well, Zhang and Li (2010) confirmed that innovations for dangerous business aware from new information and knowledge so that they communicate with other organizations and industries (Feld, 2012), whereas, they reduce costs (McEvily and Zaheer,1999) and discount risk for innovation process (Zhang and Li, 2010).

As well, many researchers found that intermediaries play important role in growth and support business and new startups (Cohen and Hochberg, 2014, Pauwels et al., 2016, Spigel 2015, Stagers,2015). Therefore, a healthy entrepreneurship ecosystem is effective presence and is regarded as incubator (Feld, 2012) which needs necessary support to growth and survival (Pauwels et al., 2016).

Zhang and Li (2010)found that regional foundation provides network of services which collects necessary information for emerging companies and they give services because of their requirements (Howells, 2006). These foundations provide network supports and established with online social media, chain networks and graduated societies (Feld, 2012). Feld (2012) emphasized that employment services play important role in establishing commercial business and this employment event can play vital role in discovering new startups and accept incubators. Therefore, it is suggested that H4: support systems are effective on success of startups is valid.

3. STUDY GOAL

3.1 RESEARCH OBJECTIVE

This article surveys the effect of systemic elements of entrepreneurial ecosystem, namely leadership, finance, talent, knowledge and support systems on startup success within the discovery stage of startups.

3.2 RESEARCH PROBLEM

This study attempts to fill the gap in the literature which exists in addressing the factors that affect the success of a startup within the discovery stage. Although, there are a number of researches that have studied startup success in different stages of the startup lifetime, there still exists the gap for studying the subject based on the entrepreneurial ecosystem elements. Filling this gap also benefits the practitioners many of which are struggling to make sure of startups' success, most of them within the discovery stage. Thus, this research tries to answer the existing problem to identify and examine the affecting factors of startup success in it's discover stage.

3.3 RESEARCH HYPOTHESES

Current research tries to test the following hypotheses:

- H1: Leadership has direct effect on startup success within the discovery stage.
H2: Finance has direct effect on startup success within the discovery stage.
H3: Talent and knowledge has direct effect on startup success within the discovery stage.
H4: Support systems has direct effect on startup success within the discovery stage.

3.4 IMPLICATIONS

Entrepreneurial ecosystem managers, accelerator program managers and investors as well as startup founders can benefit from the findings of this research based on the note that it's quite important to be able to understand the affecting factors of startup success. Although, many factors might affect the success of a startup -as this research shows that startup success could be determined 0.52 by the systemic factors of entrepreneurial ecosystem- which could not be included within this research, the systemic elements of the entrepreneurial ecosystem define a large part of a startup success. Keeping in mind the immense effect that finance, talent and knowledge, and support systems together with leadership can put on a startup success not necessarily could be enough, but can outline the crucial role each element can play in success and failure of startups in their very critical stage of discovery.

4. RESEARCH METHODOLOGY

We selected that imperial section of research on entrepreneurship startup was performed in Iran and Tehran so that it is as national environment and having ecosystem deficits. Generally, Tehran has growing process for startups and young and graduated forces who are on engineering and management and business domains. In other side, Iran needs to enhance its private section and startups which are created without support of government and by people because of economic variation mode in order to exit from productions and oil exportations and as for internal and international conditions and sanctions, as well, Iran especially Tehran was selected because of interaction with comprehensive database and in order to facilitate to access in information and by consultation with some expert professors, it is decided that startups located in growth and innovation centers of four Universities are selected as participants and total, 64 startups are selected to respond questionnaire and among them, 286 people replied and 117 startups who referred, had 519 man powers and rate of responding was 54.7% and 55.10% was suitable rate.

Also, in order to discuss ecosystem effect of startups on success of them in discovery stage, by consideration of 5 doctorate degree and 5 experts in the field of startup ecosystem were selected and three elements which are selected as most effect (finance, skill and support systems).

According to responses to questions and in relation with variables, effect of systematic elements on success of startups was tested by SPSS@22.0, AMOS 22.0 and the results are as follows.

5. ANALYSIS

5.1 DATA CLEARING

The error checking and missing data for the data set have been conducted in order to make sure that the data are cleared and ready for the statistical analysis. Thus, all the questionnaires with missing and incomplete data were deleted. Minimum number of samples acceptable for performing the analysis for this research is 250 and the sample usable for the study is 280.

5.2 NORMALITY

The most basic assumption for every multivariate analysis and especially SEM analysis is the normality of the data, which indicate the normal distribution of the data (Hair, 2010). Byrne (2010) indicates that the cut-off point for being acceptable as normal data is 7 for Skewness and Kurtosis values. Out of the 327 questionnaires distributed, a total number of 286 responses were returned. Thus, this survey recorded a very high return rate of 87.4% which could be due to the education level of the respondents.

5.3 DEMOGRAPHIC PROFILE OF THE RESPONDENTS

Table 1 shows the demographic frequency and percentage of the respondents' profile. It shows that 56.1% (157) of the respondents are male and 43.9% (123) are female. Also, the age range for all the respondents and their level of education have been included in Table 1.

Table 1: Demographic Profile of Respondents

No.	Demographic Item	Categories	Percentage	Frequency
1	Gender	1. Female	43.9	123
		2. Male	56.1	157
2	Age	1. 20 years and below	4.6	13
		2. 21 – 30 years	35.0	98
		3. 31 – 40 years	33.6	94
		4. 41 – 50	15.4	43
		5. 51 years and above	11.4	32
3	Education	1. Bachelor's degree	47.1	132
		2. Master's degree	31.1	87
		3. Doctoral degree	21.8	61

5.4 FIT INDICES FOR THE MEASUREMENT MODEL

According to Hooper et al. (2008), SEM entails three categories of fit indices that could be utilized by users and researchers to prevent errors. This study includes the reporting of three types of fit indices namely absolute fit indices, incremental fit indices and parsimony fit indices (absolute, incremental and parsimony fit indices). There are other fit indices, results of which are referable for model fit testing in SEM as TLI and IFI as reported by researchers and scholars. The fit indices of the measurement model are presented in Table 2.

Table 2: Goodness-of-Fit Indices for the Measurement Model

Fit Index	Cite	Admissibility	Results for Initial Model	Results for Improved Model	Fit for Improved Model
χ^2			394.756	335.607	
DF			289	265	
P-value		>.05	.000	.002	No
χ^2/DF	Kline and Santos (2010)	1.00 – 5.00	1.365	1.266	Yes
RMSEA	Steiger (1990)	<.80	.036	.031	Yes
GFI	Joreskog and Sorborn (1993)	>.90	.903	.914	Yes
AGFI	Joreskog and Sorborn (1993)	>.80	.882	.894	Yes
NFI	Bentler and Bonett (1980)	>.80	.882	.896	Yes
CFI	Byrne (2010)	>.90	.965	.976	Yes
IFI	Tucker and Lewis (1973)	>.90	.965	.976	Yes
TLI	Tucker and Lewis (1973)	>.90	.961	.973	Yes
PNFI	Bentler and Bonett (1980)	>.05	.784	.792	Yes
PGFI	James et al. (1982)	>.50	.744	.745	Yes

Note: χ^2 = Chi-Square, DF = Degree of Freedom, GFI = Goodness-of-Fit Index, NFI = Normed Fit Index, IFI = Increment Fit Index, TLI = Tucker-Lewis Coefficient Index, CFI = Comparative Fit Index, RMSEA = Root Mean Square Error of Approximation, PNFI = Parsimony Normed Fit Index, AGFI = Adjusted Goodness-of-Fit Index

According to Byrne (2010) the acceptable coefficients cut-off for GFI, IFI, TLI, and CFI is .90 which is an indicator of model fit. For the coefficient of AGFI, the acceptable range is equal to and more than .80. In this study, other absolute fit indices such as GFI (.914) and AGFI (.894) are also fit, and thus, it could be concluded that the model's absolute fit indices are acceptable overall. For the incremental fit indices, both NFI (.896) and CFI (.976) are in acceptable range. The parsimony fit indices of PGFI (.745) and PNFI (.792) are in acceptable range based on the exceeding value of .50 (Mollick et al., 2014). Table 3 shows that the overall fit indices for the CFA model are in acceptable range and the model is fit (Byrne 2010; Hair 2010; Kline & Santos 2010).

Table 3: Measurement properties of Total Model

Factors	CR	AVE	r ²					
			1	2	3	4	5	
1 SS	.848	.528	.727					
2 TALKNO	.858	.502	.643	.708				
3 LEAD	.821	.536	.386	.243	.732			
4 SUP	.848	.530	.571	.407	.330	.728		
5 FIN	.838	.508	.665	.602	.300	.309	.713	

Note: CR = Composite Reliability; AVE = Average Variance Extracted

5.5 VALIDITY

According to Hair (2010), in establishing the discriminant validity for each construct, the AVE estimations of each construct not only have to be greater than .50, but also greater than the corresponding inter-construct squared correlation estimates. The squared correlations between independent variables and other constructs range from .243 to .728 which proposes that both criteria of the discriminant validity are met.

5.6 STRUCTURAL MODEL FIT

According to Kline and Santos (2010) the overall fit of the model reported by RMSEA coefficient of .08 is and indicative of a satisfactory model fit and the RMSEA value of .05 and below is an indication of a very good fit for the model. The index of Chi-square/df is a ratio which could replace the chi-square alone for model fit (Wheaton & Muthen 1977). According to Kline and Santos (2010) if the ratio of X²/df is less than 5, the model represents a reasonably well fit, and if the ratio does not exceed 3, the model depicts a good fit.

Byrne (2010) Proposes the coefficient values of equal and more than .90 as the indication of model fit for the coefficients of GFI, IFI, TLI and CFI. For the parsimony fit indices of PGFI and PNFI, the acceptable value is .5 and above. Table 4 presents the fit indices of the structural model and shows that the overall model fit is acceptable (Byrne 2010; Hair 2010; Kline & Santos 2010).

Table 4: SEM Model Fit Indices

Model	Chi-Square (X ²)	df	X ² /df	RMSEA	GFI	IFI	TLI	CFI	NFI	PGFI	PNFI
SEM	335.607	265	1.266	.031	.914	.976	.973	.976	.896	.745	.792
Fit	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

5.7 HYPOTHESES TESTING RESULTS FOR DIRECT EFFECTS

All hypotheses were tested benefitting from the structural equation modeling and presented in Figure 1. The structural model fit permits the hypothesis testing as shown in Table 4. The p-values

related to each standardized path estimate is used to determine the significance level of alpha at .05.

Table 5: Direct Effect Hypotheses (output from the analysis using AMOS 22.0)

Hypothesis	Independent Variable	Dependent variable	Estimate β	S.E.	C.R.	P	Supported
H1	LEAD	→ SS	.15	.090	3.324	***	Yes
H2	FIN	→ SS	.43	.071	3.463	***	Yes
H3	TALKNO	→ SS	.41	.067	3.484	***	Yes
H4	SUP	→ SS	.38	.048	4.931	***	Yes

Note: TALKNO=Talent and Knowledge, LEAD=Leadership, SUP=Support Systems, FIN=FINANCE, SS=Startup Success; *** = $p < .000$, ** = $p < .01$, * = $p < .05$; S.E. = Standard Error; C.R. = Critical Ratio; Estimate β = Strength and power of a relationship

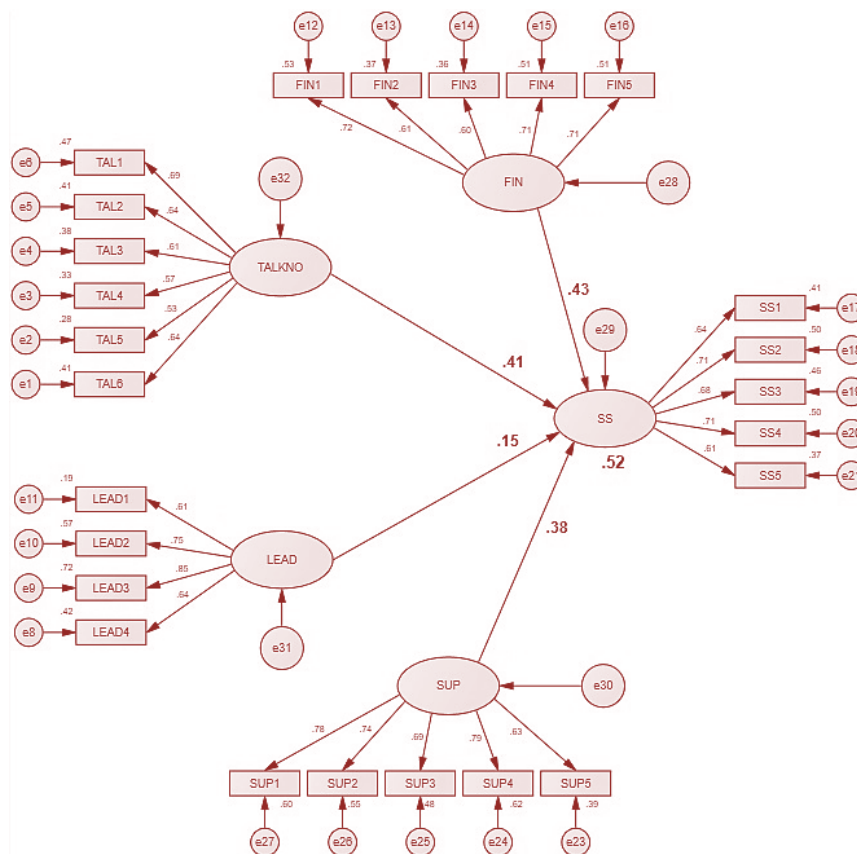


Figure 1: Structural Equation Model (SEM) results of the variables in the study

Based on the results from the SEM (Structural Equation Modeling) by AMOS 22.0 all four hypotheses of the research were accepted with high level of confidence ($p < .000$) and thus, we can conclude that each of the four independent variables of the study play crucial role in determining startup success within the discovery stage. But as the estimate β size is different for relationships between independent variables and the dependent variable, startup success is defined differently.

6. CONCLUSION

Startup success is defined 0.52 by the four constructs of leadership, finance, talent and knowledge, and support systems. It means by controlling and affecting the four independent variables a great deal of the startup success can be defined within the discovery stage of the startup.

The most powerful factor affecting startup success within the discovery stage is finance by the

estimate β size of 0.43. This means the relationship between finance and startup success is a strong relationship and for gaining startup success it is most needed to strengthen the finance for the startup. The second most powerful relationship belongs to the relationship between talent and knowledge as independent variables and the startup success as an independent variable by the estimate β size of 0.41. The third most powerful relationship belong to the relationship between support systems and the startup success which has the estimate β size of 0.38. The last powerful relationship exists between leadership and startup success, including estimate β size of 0.15.

It could be concluded that although all the relationships are very significant by the p-value of 0.001 and less, the effect of the three most important factors affecting the success of a startup in its discovery stage belong to finance, talent and knowledge, and leadership by having relevantly very close estimate β sizes. Moreover, keeping in mind the significant effect of leadership on startup success by having 0.15 strength, we can conclude that leadership not only plays a crucial role but also a key to wrapping up all the networks through which financing, talent, knowledge and support systems can benefit a startup.

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