

Original Research Article

Effect of Symbiotic Relationship on self-organized Startup entrepreneurship, an Innovative synergy

Abstract

Self-organized theory-series are improving constantly with strong explanation base for entrepreneurship, with symbiotic theory as the most important one of which plays very crucial role for startups ' symbiotic relationship survival rate, goodwill and growth potential on self-organized startup entrepreneurship. The study used structural equation model in analyzing the sampled data of 399 responses, showing that all the measurement models and constructs used fit the data well thus Absolute fit index, Incremental fit index and Parsimonious fit index were all within the acceptable ranges. The three constructs, symbiotic relationship, innovative ideas and social relationship, are indicative that they have the ability to influence self-organized startup businesses. The results of the test on the two hypothesis are confirmed and supported. A unit change in symbiotic relationship can lead to 0.192 increase in small business startups whilst a percentage change in innovative ideas can positively influence small startups by 0.274%.

Key words: Symbiotic Relationship, Self-Organized Startup, Entrepreneurship, Innovation.

1Introduction

Technological and globalization change have brought new opportunities for small and medium enterprises (SMEs), but they have also created risks, which needs strategic team building for symbiotic relationship. The complementary nature of innovation and resource-based theory in the study of symbiotic innovative relationships of self-organized startup businesses takes cognizance of the environmental context, problems and offers strategies on how to leverage on the inherent benefits in their applications.

The research advanced to ongoing debates on entrepreneurship as an anchor for economic growth and stability. It impacts on symbiotic relationship of entrepreneurs for startup business which plays a crucial role on the survival rate of new businesses with goodwill and growth potential.

30 The major problem that has led to this research is the lack of team work and symbiotic
31 relationship on the part of entrepreneurs which leads to low growth rate and high failure rate
32 of enterprises. The aim of the study is to establish a positive relationship between symbiotic
33 relationship and self-organized startup business's being successful. Entrepreneurs lack the
34 ability to maintain an innovative culture which is the growth plan and necessary ingredient
35 for any startup's survival. This hold especially for startups in small innovative businesses.
36 Ability to identify opportunity and be innovative will make the entrepreneur stand out and be
37 more competitive. For a startup to be competitive enough, there should be a synergy of team.
38 A team comprises of individual with similar capabilities and identical focus. In order to
39 develop a highly successful team culture, organizations in general and startup in particular
40 need to have suitable candidates for the team to be a think tank for the enterprise. Most
41 startups lack trained and professional people to handle strategies for great performance.

42

43 The theoretical foundations of symbiotic relationship offer a wide array of opportunities to
44 small businesses. Similarly, several studies reinstates the need for small businesses to develop
45 their capabilities. The importance of developing their capabilities forms the root of recent
46 research with evidences that it may translate to growth and invariably lead to sustainable
47 competitive advantages in different frontiers of operations.

48 Self-organized entrepreneurial startup according to research is likely to be more successful if
49 there is a symbiotic relationship consisting of individuals with different levels of innovative
50 and insightful ideas and not just a single physical person (Joseph Alois Schumpeter, 1965).
51 Recent business research has paid increasing attention to entrepreneurship symbiotic
52 relationship, which describes close interaction between two or more different species or
53 people ready to solve problems. In modern day business, symbiosis relationship is touted to
54 be "the superior entrepreneurial start-up concept". They are regarded as the major catalyst of
55 new venture creation. "Entrepreneurial symbiosis relationships are responsible for many (or
56 perhaps most) of the major start-ups today" Similarly, Astley and Fombrun (Astley &
57 Fombrun, 1983) suggests that "entrepreneurial symbiosis relationships are at the heart of any
58 new venture". In addition, several studies claim that firms founded by entrepreneurial
59 symbiotic relationship are more likely to survive and to achieve faster growth than ventures
60 started by individual entrepreneurs.

61 The network social relationships on Self-organized startups, Innovative businesses,
62 Symbiotic Relationship, Opportunity recognition, etc. plays very important roles in the
63 present exploratory study on the effect of symbiotic relation on startups in China, especially
64 for the importance of symbiotic relationship on self-organized startups.

65 **2 Conception description**

66 **2.1 Self-organized startup and basic process**

67

68 One famous definition of startup given by Ries (2011) in *The Lean Startup*, state that a
69 startup is an organization designed to create new products and services under conditions of
70 extreme uncertainty(Ries, 2011). In his book, *Four Steps to the Epiphany*, Steve Blank
71 (2012) iterated that a startup is a temporary organization designed to search for a repeatable
72 and scalable business model(Blank, 2012). Thus, the four defining qualities of startups that is
73 offered by Ries and Blank are: (1) creating “new products and services”; (2) operating “under
74 conditions of extreme uncertainty”, (3) “temporary organization” and (4) a “repeatable and
75 scalable business model.” In another view, Vesper (1990) have presented evidence
76 concerning success and non-success, as well as abstract systems for analyzing and developing
77 entrepreneurial action in order to offer strategies for business entry and startup(Vesper,
78 1990). And it greatly works in self-organization (Zhang, 2015),which combining external-
79 organization as the two broad categories for Organization, is a goal-directed social entity that
80 is premeditated as a consciously structured and coordinated dynamic system connecting with
81 the external environment (Santos & Eisenhardt, 2005).

82 Typically, a small self-organized startup will commence by building a first minimum viable
83 product (MVP), a pattern, to validate, consider and develop new ideas or business thoughts
84 (Ries, 2011). Additionally, Park (2005) postulated that startups initiators do research to
85 develop their understanding of the ideas, technologies or business models and their
86 commercial potential (Park, 2005). In another instance, business prototypes for startups are
87 generally found through a "bottom-up" or "top-down" approach (Zettel, Maurer, Münch,
88 &Wong, 2001). Companies can cease to be a startup firm as it passes through various
89 milestones, such as becoming publicly traded on the stock market in an Initial Public
90 Offering (IPO), or ceasing to exist as an autonomous entity via a merger or acquisition
91 (Blank, 2012).

92 Another critical mechanism contributed is the Startup process, which starts with idea
93 formulation that emanate from past experience, training and education, human capital
94 creativity, and influence of family and friends (Zimmerman & Zeitz, 2002), the idea
95 formulation the second stage of startup is opportunity recognition, followed by prestart
96 planning and preparation, the ensuing stage is entry and launch and finally the post entry
97 development.

98 According to Zimmerman and Zeitz (2002), business start-up process can be categorized into
99 a number of stages: (1) the formation of the idea, (2) opportunity recognition; (3) pre-start
100 planning and preparation including pilot testing (4) entry into entrepreneurship; (5) launch
101 and subsequent development. Each of these stages will have a number of dynamics that will
102 impact on the process. These may either encourage further development or have a negative
103 influence, perhaps causing the individual promising entrepreneur to terminate the process.
104 These factors will include the nature of the local environment, culture, access to finance,
105 local support networks, role models and enterprise support and reassurance. A new startup
106 needs to combine different legitimation strategies, such as selecting a favorable environment,
107 manipulating expectations and creating new ways of doing things (Zimmerman & Zeitz,
108 2002). From the present findings over the years evolutionary of the self-organized startup
109 business have not united the process, it is the production of different government policies,
110 market environment and condition of the players (Deakins & Whittam, 2000). In certain
111 instances, firms may also be unsuccessful and cease to operate completely, an outcome that is
112 very likely for startups, given that they are developing disruptive innovations which may not
113 function as anticipated and for which there may not be market demand, even when the
114 product or service is finally developed (Ries, 2011).

115 **2.2 Synergetic Theory of self-organized**

116 Synergetic theory is an important part of series of the complex and gigantic self-
117 organized which is broadly accepted and adopted. Synergetic theory is one of the three main
118 different theories of self-organization: the synergetic (Haken, 2004), dissipative structure
119 theory (Brogliato, Lozano, Maschke, & Egeland, 2007; Glansdorff & Prigogine, 1971), and
120 catastrophe theory (Saari, 1977). It was originally founded by the physician Hermann Haken
121 in 1969; it is an interdisciplinary approach that enables examination of the self-organization of
122 complex systems. Haken was the first to show that laser light can be explained only by self-
123 organization phenomena. He describes the self-organized as the establishment of order within

systems through the behavior of their components. This term refers to systems characterized by openness, dynamic behavior, and complexity (Haken, 2004), stimulated by the laser theory.

A prerequisite for the self-organization progression is that the system must be an open system because a system can only be self-organizing if power is added externally. Only open systems can create self-organized evolutionary structures, as all other systems die of heat exhaustion which in the business context can emanate from either macro or micro level. One can also speak about control parameters in this context, although they can at most symbolize unspecific control by the environment. Haken's analysis of the laser principles as self-organization of non-equilibrium systems paved the way at the end of the 1960s to the development of synergetic theory. There is indication that Synergetic theory has already got further developments from researchers (Schiepek, Tominschek, & Heinzl, 2014). Synergetic theory can equally be related to the business and entrepreneurial environment where the entrepreneur should exert order and orderliness in a well-organized manner to be successful. To sum up, there are three main arguments from synergetic theory: first, within the existence of a large number of subsystems, on the basis of equal input of the necessary material, energy and information, the business must fuel competition, form the network of influence and interaction. Secondly, promote cooperation, form the necessary pressure that contends with competition, and do not interfere with some benefits of collaboration naturally to form a greater gain independently. Thirdly, once the order structure is formed, it should be noted that the domination of the order parameter cannot be organized and the dynamical process of the system should be organized in accordance with the rule of the self-organization process of the system. Once, there is order, the entrepreneur can initiate ideas and be creative enough for a sustainable startup business.

2.2.1 Self-organized startups and Innovative ideas

Joseph Schumpeter's innovation theory of entrepreneurship (Joseph A Schumpeter, 2017) identified an entrepreneur as one having three major characteristics: innovation, foresight, and creativity. Self-organized startup generally takes place when the entrepreneur (1) creates a new product (2) introduces a new way to make a product (3) discovers a new market for a product (4) finds a new source of raw material and (5) finds new way of making things or organizing. However, Schumpeter's innovation theory build on the hypothesis which applies

to large-scale businesses, and ignores the entrepreneur's risk taking ability(Zahra, 2005) and organizational skills, and place undue importance on innovation, especially for the self-organized small business. In most economies, economic conditions force small entrepreneurs to imitate rather than innovate. Other economists have added a dimension to imitating and adapting to innovation(Pil & Cohen, 2006). This entails successful imitation for self-originated startup by adapting a product to a niche in a better way than the original product innovators innovate.

Globally innovation is now accepted on macro level that is a driver of economic and social progress as well as a driver of business success and competitive advantage at the firm (micro) level (Kramer, 2011). However, if countries want to move towards a more ecologically sound and successful society, it is important to promote specific areas of innovation (Jansson, Marell, & Nordlund, 2010), especially in self -organized startup, which for china economic development with more than 70% contribution on service industry. Now new paths continuously explored by such innovation, try to allow for new ways of addressing current and future environmental problems and decreasing energy and resource consumption, while promoting sustainable economic activity (Schaltegger, Lüdeke-Freund, & Hansen, 2012), for example, eco-innovation (or green innovation). Norman and Verganti (2014) have iterated that there are three types of eco-innovation: *Incremental*, *Disruptive* and *Radical innovation*. For self-organized startup, incremental innovation is to modify and improve existing technologies or processes to raise efficiency of resource and energy use. Disruptive innovation alters how things are done or specific functions are fulfilled, without necessarily changing the underlying technological regime itself. And finally radical eco-innovation involves a shift in the technological regime of an economy and can lead to changes in the economy's enabling technologies(Norman & Verganti, 2014).

2.3 Critical factors of self-organized startups

Factors plays very crucial role for startup business in many findings discussed, but according to Ann (2017), this study will consistently especially concentrate on social relations, symbiotic relations and opportunity recognition, as enumerated below.

2.3.1 Social Relationship and self-organized startup

One of the most important factors for self-organized startup is no doubt social relationship which is formed by individuals such as family, friends, acquaintances, and employees(Zhou, Wu, & Luo, 2007). There are a number of research findings related to social relationship

which plays very important role in self-organized startups. Enumerated below are the results from different views. For instance, social relations assist firms to seek financial benefits (Uzzi, 1999)(Maas, Seferiadis, Bunders, & Zweekhorst, 2014). People use family and other strong ties for getting resources or support (Oh, Chung, & Labianca, 2004). They use weak ties to pass on information they would not get from their close ties (Greve & Salaff, 2003).

Social networks are distinct by a set of actors or players (individuals or organizations) and a set of links between the actors (Borgatti, 2006). Social network members can contact and organize themselves and thereby increase the opportunities they make available to entrepreneurs (O'Murchu, Breslin, & Decker, 2004). Zimmer and Aldrich (1987) and Chard, Bubendorfer et al (2012) find that a preexisting web of relationships, in particular among friends and family, are resource providers in the new venture process and in addition (Zimmer & Aldrich, 1987), the relationships between entrepreneurs and other actors provide resources that are important to establishing a business (Chard, Bubendorfer, Caton, & Rana, 2012).

The individuals being targeted by the entrepreneur are connected through social relationships (Bott & Spillius, 2014) and are part of a social network, which is a sub-network within a business network. In these models the social relationships are developed mainly during intermediate stages and social circles. In China for instance, personal relationship is known as *guanxi*. The later exists between two persons (Yen, Barnes, & Wang, 2011) and they are frequently related to a common background, such as having gone to school or having studied together, coming from the same part of China, or having worked together.

However, symbiotic relationship is the core of self-organized startups. The entrepreneur needs to partner with other technical people to have a steadily growing organization.

2.3.2 Symbiotic relationship and self-organized startups

In self-organized startups, symbiotic relationship describes close interaction between two or more different people whose interaction provide benefits to both of them (Pringle, Dirzo, & Gordon, 2011). There are many different types of symbiotic relationships that occur in nature (Astley & Fombrun, 1983). Gilbert, Sapp et al. have identified that the word symbiosis literally means 'living together,' (Gilbert, Sapp, & Tauber, 2012) but when the word symbiosis is used in biology, it is being referred to a close, long-term interaction between two different species.

Astley and Fombrun (1983) and Astley (1984) proposed an analytical framework for inter-organizational relations (Astley & Fombrun, 1983). They suggested a procedure which is called the collective strategy that incorporated the population ecology concept of symbiotic relationships. They applied the term “commensalistic” in their study, considering that the concept of symbiotic relationships could be applied to corporate strategy. To date, the theory of commensalism in collective strategy has been applied in the literature of management strategy and self-organized entrepreneurship. (Haak 2004). Rigorous empirical studies of this concept, however, have yet to be presented.

In self-organized startups a symbiotic partnership comes together because they solve problems. Sometimes one half of the partnership benefits more, (Lichodzijewski & Heywood, 2008) while the other half finds itself barely benefiting but it does not matter as long as both sides can grow their business and get better results.

Symbiotic relationships are important to entrepreneurs and self-organized startups for a number of reasons the most important of these is that by developing symbiotic relationships, a competitive advantage can be achieved which may not have been possible without the contribution of each firm’s resources. In his research, Dickenson (2012) iterated that, there are five outcomes of symbiotic marketing termed networking that contributes to this enhanced competitive advantage (Dickinson, 2012). He argued that, by focusing on the whole value chain, rather than only the firm, managers have the opportunity to enhance quality or reduce costs in domains that were inaccessible prior to symbiosis.

Davis and Eisenhardt (2011) also added that self-organized startups involved in symbiotic relationships have access to external technical expertise which is crucial and gives the firm access to market information (Davis & Eisenhardt, 2011), locating partners with resources to increase revenue (Dana, Etemad, & Wright, 2008) and market risk by spreading such risk among all of the individual members of the symbiotic relationship (Dickinson, 2012). Building a good symbiotic relationship can lead to opportunity recognition for any self-organized startup businesses.

2.3.3 Opportunity recognition and self-organized startup

Translating an idea into a business opportunity (Zimmerman & Zeitz, 2002) is the key element of the process of self-organized startup business creation. Moving from the idea stage to the exploitation of the opportunity requires many elements to be in place. The

economic environment has to be conducive, the culture must be suitable for risk-taking and the promising entrepreneur must have the confidence to take an idea suggested by opportunities through to fulfilment. Opportunities are generated by change. Change may be political, economic, social, demographic or technical.

Scholars have given augmented attention to straightening out the antecedents of opportunity recognition (e.g.(Baron & Ensley, 2006); (Casson & Wadeson, 2007). One of the findings in this stream of research is that, some people are better at detecting new business opportunities than other people, and that this superior ability makes them more likely than other people to start businesses (Yoon, 2012). Entrepreneurship for instance is seen as “the pursuit of opportunity beyond the resources currently under one’s control” (Stevenson & Jarillo, 2007). Opportunity recognition is one of the most important aspects of entrepreneurship. It is particularly crucial for new enterprises, as the recognition of opportunities is arequisite initial step for entrepreneurial activities. Baron (2004) has indicated that opportunity recognition is a means of creating economic value that have not been formerly exploited or currently being used by other people.

Combining the paper’scentral objective, researchers built the conceptual framework below.

2.4Conceptual Framework

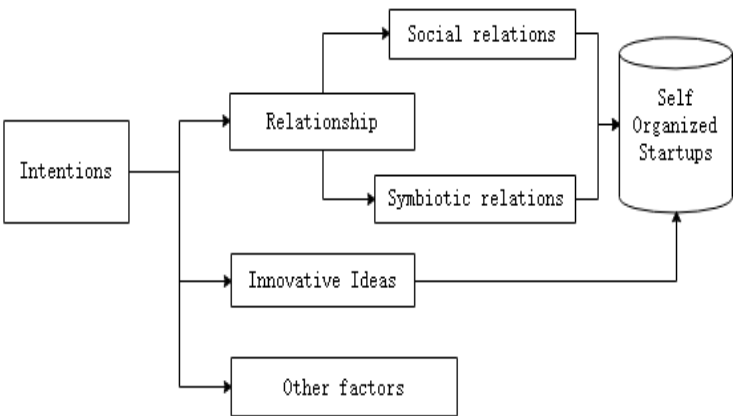


Figure 1:Symbiotic relations with self-organized startups

Based on the abovetheoretical and conceptual framework, to explore the effect of symbiotic relationship on self-organized startup entrepreneurship, as an innovative synergy, the followed Hypotheses were developed:

H₁:There is a positive and significant relationship between symbiotic relationship and self-organized startup businesses.

H₂: There is a positive and significant relationship between social relationship and self-organized startup businesses.

H₃: There is a positive and significant relationship between innovative Ideas and self-organized startup businesses.

3 Methodology

This study aims at the effect of symbiotic relationship on self-organized startup business and employed quantitative research design in its data collection process. In this view, detection and surveying of different solutions were performed by combining secondary and primary sources of information. More specifically raw data on symbiotic relationship for self-organized startups were collected from young entrepreneurs from Zhenjiang city in the Jiangsu Province. A questionnaire was developed based on entrepreneurship.

The study uses structural equation model (SEM) for the testing of its hypothesis. Under SEM factor loadings are usually affected by the number of indicators in the model that constitute various constructs. Some studies show that the number of indicators per factor has a negative effect on some model fit indices. For example, there is evidence (Anderson & Gerbing, 1984) that a larger number of indicators per factor leads to poor model fit as indicated by GFI, AGFI. (Ding, Velicer, & Harlow, 1995) found that NFI, NNFI, RNI, and CFI were negatively affected by increasing the indicator per factor ratio.

The factor loading of an indicator to its underlying factor is dependent rather than fixed. The value of the factor loading of a specific indicator may change if more indicators are added to the model. According to Kim and Mueller (1978) factor loading level of 0.30 is considered as the cut-off point for the magnitude of standardized factor loadings (Kim & Mueller, 1978). In the view of Ford, MacCallum and Tait, (1986) a standardized factor loading value of 0.40 is accepted (Ford, MacCallum, & Tait, 1986).

The questionnaire is divided into five main sections. Section one consists of demographics where there is age, gender, and intends to set up a business. Sections two dealt with social relationships. The third section centers on startup businesses, the fourth on symbiotic relationship and the last part on innovative ideas.

Based on matured method of Econometric Model, in the above discussions for the variables the equation below was arrived at:

$$SB = \alpha + \beta_1 SY + \beta_2 IND + \beta_3 SR + \mu$$

311 Where

312 SB = the dependent variable,

313 α = constant

314 β = influencing coefficient

315 SY, IND, SR = Independent variables

316 μ = disturbance/error term

317 The above model seeks to establish whether the dependent variable (SB) is influenced by the

318 independent variables which includes SY, SR and IND .

319 **3.1 Sampling Analysis**

320 Questionnaire that was sent to the field total 450 copies based on the cluster sampling and

321 random sampling, cluster here means focusing on Zhenjiang city area. The responded

322 questionnaire that was received was 399 which constitute 88.75% of respondents. That

323 indicates that more than half of the questionnaires were received back. Other questionnaires

324 were not received due to reasons like missing questionnaire, respondents not available,

325 relocation of respondents and inability to collect back questionnaire sent to respondents.

326 The study uses a Likert-type five-point scale adopted from Keat, Selvarajah, and Meyer

327 (2011) ranging from 1 “strongly disagree to 5 “strongly agree” for all the constructs

328 measuring self-organized startup business. Social relation (SR) which is one of the constructs

329 was measured by five (5) indicators, for instance; “my friends see entrepreneur as a good

330 means of succeeding in life”; my relatives will give me the opportunity to acquire

331 entrepreneurial experience. The second construct which is symbiotic relationship (SY) was

332 measured by 5 indicators among which included; I always benefit from partnering with

333 experienced entrepreneurs for advice, I have a lot of experience from getting close to my

334 entrepreneur friends. The third construct is innovative ideas with 4 indicators (IND), and was

335 measured by; “I have the ability to easily recognize innovative ideas”, “I am good at

336 detecting new business opportunities”. The last construct is startup business (SB) with 5

337 indicators with examples as “I have the passion to create jobs for people, I am ready to set up

338 a business with any least opportunity”.

3.2 Reliability and validity check

One issue which is quite imperative in social science research is the quantification of human behavior that is, using measurement instruments to observe human behavior. The measurement of human behavior is widely acknowledged by positivist view, or empirical analytic approach, to discern reality (Smallbone & Quinton, 2004).

Reliability is an important concern when a psychological test is used to measure behavior (Thompson & Thompson, 2003). The most commonly used procedure to estimate reliability is with a measure of association, the correlation coefficient, often termed reliability coefficient (Drost, 2011).

The reliability coefficient is the correlation between two or more variables (here tests, items, or raters) which measure the same thing. Details of the reliability test are represented below.

Table 1.

Variables	Cronbach's Alpha	No of Items
Symbiotic relationship	.824	5
Innovative Ideas	.788	4
Social relationship	.830	5
Startup business	.835	5

Source: survey data2017

The cronbach alpha indicated up to .835 demonstrating a strong consistency.

3.3 Findings and Data Analysis.

The study used structural equation model to establish relationships between the independent constructs and the dependent construct. The data was analyzed using AMOS 20.0 software package. To adhere to modifications made in the indicators, the study through Amos 20.0 conducted confirmatory factor analysis.

To guarantee that the data is representative of its anticipated purpose, reliability, validity and factor loadings for the constructs were assessed. We recorded a lower factor loading of 0.38 and a higher factor loading of 0.81. The lower loading of 0.38 was maintained as an accepted factor loading according to Kim and Mueller (1978) of an accepted value of 0.30. However, one of the indicators that had a lower loadings of 0.33 was deleted from subsequent analysis. The deleted indicator was associated with social relations. It was removed to improve the fitness of the model as it had a higher modification index.

The Cronbach's alpha for the constructs ranges from 0.788 to 0.835, which are well above the 0.70 indicating a good internal reliability of the constructs indicators. The validity of the data was tested and the data was considered valid as all the values of AVE met the 0.5 threshold with only AVE of social relationship (AVE of SR=0.422653) slightly missing the accepted 0.50 threshold. This could be attributed to the large number of indicators and sample size. Discriminant validity was resolved by deleting the redundant item from the model as can be seen in the structural model (figure 2).

The analysis shows that all the measurement models and constructs used fit the data well with the exception of NFI (0.874) thus Absolute fit index, Incremental fit index and Parsimonious fit index were all within the acceptable ranges (RMSEA= 0.062, CFI = 0.919, GFI = 0.919). This is shown in table 2 below. This means that the data is a true measure of the model. The low value of NFI(0.874) is as a result of many indicators in the model as indicated by Ding, Velicer et al. (1995).

3.4 Testing of hypothesis and Results

The results of the test on the hypothesis confirmed and supported hypothesis H₁ ($\beta = 0.192$, $P > 0.001$) showing a positive and significant level whilst hypothesis H₃ ($\beta = 0.274$, $P < 0.001$) is also positive statistically and showing a positive and significant level. From the results we accept the alternate hypothesis that there is a relationship between symbiotic relationship and small business startups. We also accept the alternate hypothesis that there is a relationship between innovative ideas and small business startups.

3.4.1 Explanation for the influencing coefficients for the variables in the model:

$$SB = \alpha + \beta_1 SY + \beta_2 IND + \beta_3 SR + \mu \quad (1)$$

$$SB = \alpha + 0.106 SY + 0.441 IND + 0.126 SR \quad (2)$$

From the above (1), if there is a unit increase in SY (β_1) it will lead to 0.192 increase in small startup business (SB) at a p-value of 0.001 which is statistically significant.

Also from the equation, a unit change in IND (β_2) will bring about 0.274 increase in startup businesses (SB) at a p-value of 0.001 which is also significant.

Lastly, if there is a unit change in SR (β_3) it will influence small business startups (SB) by 0.377 which was constrained.

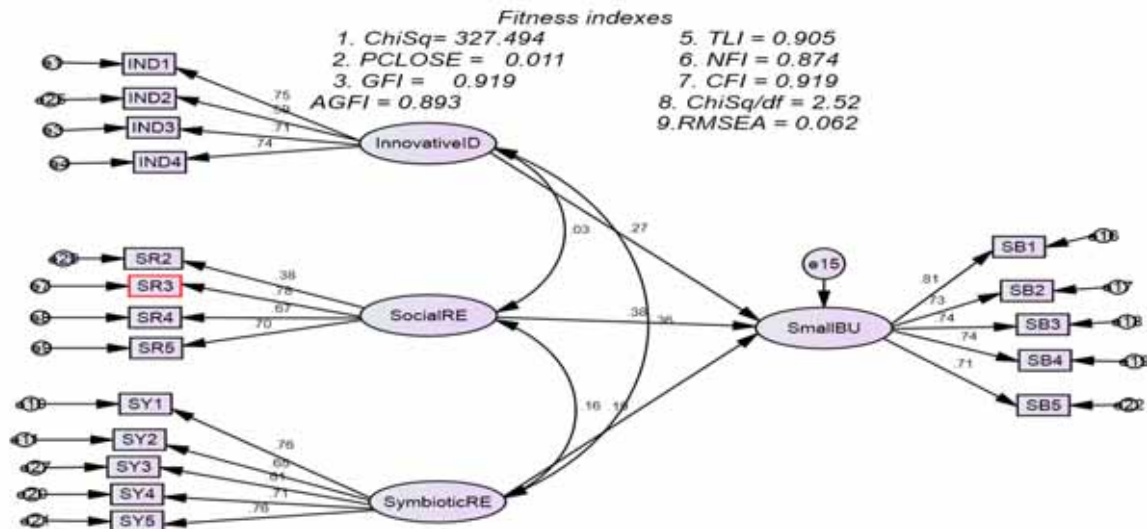


Fig 2 Regression result from AMOS

Table 2. Fitness indexes

Name of category	Name of index
Absolute fit	RMSEA = 0.062
	GFI = 0.919
Incremental fit	AGFI = 0.893
	CFI = 0.919
	TLI = 0.905
	NFI = 0.874
Parsimonious fit	Chisq/df = 2.52

Table 3. Regression result (direct effect)

	Estimate	P-value	Result
Symbioticrelationship	0.192	0.001	Significant
InnovativeIdeas	0.274	***	Significant
Socialrelationship	0.377	constrained	

Table 4: Regression Weights

Standardized Regression		S.E.	C.R.	P	Label
SmallBU	<--- InnovativeID	.077	4.516	***	par_4
SmallBU	<--- SocialRE				

Standardized Regression		S.E.	C.R.	P	Label
SmallBU	<--- SymbioticRE	.067	3.262	.001	par_5
IND1	<--- InnovativeID				
IND3	<--- InnovativeID	.076	12.259	***	par_6
IND4	<--- InnovativeID	.074	12.580	***	par_7
SR3	<--- SocialRE	.301	8.524	***	par_8
SR4	<--- SocialRE	.248	8.180	***	par_9
SR5	<--- SocialRE	.261	8.332	***	par_10
SY1	<--- SymbioticRE				
SY2	<--- SymbioticRE	.065	12.008	***	par_11
SB1	<--- SmallBU				
SB2	<--- SmallBU	.060	15.013	***	par_12
SB3	<--- SmallBU	.054	15.326	***	par_13
SB4	<--- SmallBU	.057	15.280	***	par_14
SB5	<--- SmallBU	.058	14.571	***	par_15
SY4	<--- SymbioticRE	.064	13.112	***	par_16
SY5	<--- SymbioticRE	.072	13.998	***	par_17
IND2	<--- InnovativeID	.077	10.447	***	par_18
SY3	<--- SymbioticRE	.062	11.229	***	par_19
SR2	<--- SocialRE				

404

405 Table 4 above shows the results of standardized estimates, critical ratio and the p- values of
406 the different constructs and their indicators. All the p- values are less than 1% at a two tail
407 indicating that all the standardized estimates are statistically significant.

408 **4.Discussions and conclusions**

409 Through assessing the effect of symbiotic relationship on self-organized startup businesses,
410 the factors were categorized into symbiotic relationship, social relationship and Innovative
411 ideas and to determine the relationships of these factors withself-organized startup
412 businesses. This research has established that there exist relationships between self-organized
413 startup businesses and the three constructs (symbiotic relationship, social relationship and
414 Innovative ideas). The findings are indicative of the three constructs having the ability to
415 influence self-organized startup businesses. Obviously, symbiotic relationship has a positive
416 and significant effect on self-organized startup businesses ($\beta = 0.192$, $P > 0.001$)as indicated
417 in table 3.(Astley and Fombrun 1983). The study also affirms the findings of Pringle, Dirzo
418 et al. (2011) research, that many organizations are involved in symbiotic relationship because
419 this interaction provides benefits to the individuals involved (Pringle et al., 2011).This

contributed to the existing discussions on self-organized startup businesses theoretically by examining symbiotic relationship, innovative ideas and social relationship on self-organized startup businesses. This is one of the few researches to study the exact position of small start-up businesses with synergetic theory.

The study pioneers empirical research on the theory and practice of development frontier as facts with investigations of establishing that symbiotic relationship had positive and significant relationship with self-organized startup businesses whilst social relationship was constrained. Innovative ideas also indicated a positive and significant relationship with self-organized startup businesses. It also used Amos 20.0 software package through structural equation model.

The findings of the study can assist in the development of more startup businesses which is core to the growth of economies.

5. Contribution and Implications

This study will make significant contributions theoretically, methodological and managerially to the literature of self-organized start-up businesses in order to enrich related knowledge and understanding of symbiotic relationship on self-organized start up mechanism of technological entrepreneurship.

The findings will provide insights that will help regulators (government) and policy makers to formulate relevant policies, strategies, and guidelines to boost start-up businesses.

By adopting the structural equation model with Amos software package in the analysis of the data and establishing relationships, the study has enriched the methodology adopted in self-organized startup businesses research from the many usual regression analysis approach.

The study recommends that regulators (government) and policy makers should formulate relevant policies, strategies, and guidelines to boost start-up businesses and encourage activities, projects, programs and policies that will improve the capacities and abilities of young entrepreneurs to identify entrepreneurial opportunities in their environment as well as being innovative in their ideas related to startup businesses.

There should also be financial support to assist young and up and coming entrepreneurs to start their own businesses. The study therefore recommends that there ought to be deliberate policies and programs to ensure that the financial environment is conducive to attract people to start their own businesses.

5.1 Emerging Trends

Self-organized startup as a phenomenon is a fast emerging transformational trend of the 21st century which is capable of reshaping economies globally, as the main drivers of economic growth, entrepreneurs are the lifeblood of any growing economy, generating jobs, introducing new products and services, and promoting greater upstream and downstream value-chain activities and accomplishments. According to the Organization for Economic Cooperation and Development, SMEs on average contribute around 50% or more to the GDP; provide employment to an estimated 60% of local workforce; create up to 70% of new job opportunities; and account for about 30% of exports(Lukács, 2005).In recent years, the global entrepreneurial landscape has witnessed a focal pattern in terms of trends, with SMEs playing a fundamental role in social and economic advancement.

5.2 Limitation and further research directions

Some limitations exist in this study. Firstly, the researchers just collected effective sampled data of 399 numbers, the sample data is not representative enough for the study to be generalized. The findings represent just a portion of the views of the population, just a minute of views for self-organized symbiotic research. Secondly, Different industries have different views on self-organized symbiotic relationship and its findings may not be generalized to other contexts but it is also important experience or references for other related researchers. The exploratory nature of the case in the context of a single country offers important insight in terms of understanding the effect of symbiotic relationship on self-organized startups context. Thirdly, the different data uses different methods and Amos structural equation model is not advanced enough to recreate other hidden ideas and ways of analyzing data. This is limited by the research recognition of future happening and what kind of correlation with research methods.

The contribution of the study is worth of our sample size which comprises of China based entrepreneurs, where self-organized entrepreneurship has already created business legends, most of which are practicing symbiotic relationship, there can also be assessing of the symbiotic relationship on self-organized startups from other countries in future work, like One Belt and One Road initiative as an additional insights. There can be further studies on the impact of self-organized startup and government oriented, the community, customer or education oriented indicating reasons, driving force, behavior preferences and evolutionary mechanism. From academic research, self-organized startup should be further studied from

self-organized theories, for example: dissipative structure, synergetic, catastrophe, and super circle etc. (Schumpeter 2017).

References

- Anderson, J. C, & Gerbing, D. W. (1984). The effect of sampling error on convergence, improper solutions, and goodness-of-fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika*, 49, 155-172.
- Astley, W Graham, & Fombrun, Charles J. (1983). Collective strategy: Social ecology of organizational environments. *Academy of management review*, 8(4), 576-587.
- Baron, Robert A. (2004). *OPPORTUNITY RECOGNITION: A COGNITIVE PERSPECTIVE*. Paper presented at the Academy of Management Proceedings.
- Baron, Robert A, & Ensley, Michael D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management science*, 52(9), 1331-1344.
- Blank, Steve. (2012). *The startup owner's manual: The step-by-step guide for building a great company*: BookBaby.
- Borgatti, Stephen P. (2006). Identifying sets of key players in a social network. *Computational & Mathematical Organization Theory*, 12(1), 21-34.
- Bott, Elizabeth, & Spillius, Elizabeth Bott. (2014). *Family and social network: Roles, norms and external relationships in ordinary urban families*: Routledge.
- Brogliato, Bernard, Lozano, Rogelio, Maschke, Bernhard, & Egeland, Olav. (2007). Dissipative systems analysis and control. *Theory and Applications*, 2.
- Casson, Mark, & Wadeson, Nigel. (2007). The discovery of opportunities: Extending the economic theory of the entrepreneur. *Small Business Economics*, 28(4), 285-300.
- Chard, Kyle, Bubendorfer, Kris, Caton, Simon, & Rana, Omer F. (2012). Social cloud computing: A vision for socially motivated resource sharing. *IEEE Transactions on Services Computing*, 5(4), 551-563.
- Dana, Leo Paul, Etemad, Hamid, & Wright, Richard W. (2008). Toward a paradigm of symbiotic entrepreneurship. *International Journal of Entrepreneurship and Small Business*, 5(2), 109-126.
- Davis, Jason P, & Eisenhardt, Kathleen M. (2011). Rotating leadership and collaborative innovation: Recombination processes in symbiotic relationships. *Administrative Science Quarterly*, 56(2), 159-201.
- Deakins, David, & Whittam, Geoff. (2000). Business start-up: theory, practice and policy. *Enterprise and Small Business Principles, Practice and Policy*, 115-131.
- Dickinson, J Barry. (2012). Symbiotic marketing: a network perspective. *Journal of Management and Marketing Research*, 11, 1.
- Ding, Lin, Velicer, Wayne F, & Harlow, Lisa L. (1995). Effects of estimation methods, number of indicators per factor, and improper solutions on structural equation modeling fit indices. *Structural Equation Modeling: A Multidisciplinary Journal*, 2(2), 119-143.
- Drost, Ellen A. (2011). Validity and reliability in social science research. *Education Research and Perspectives*, 38(1), 105.
- Ford, J Kevin, MacCallum, Robert C, & Tait, Marianne. (1986). The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel psychology*, 39(2), 291-314.
- Gilbert, Scott F, Sapp, Jan, & Tauber, Alfred I. (2012). A symbiotic view of life: we have never been individuals. *The Quarterly review of biology*, 87(4), 325-341.
- Glansdorff, P, & Prigogine, Ilya. (1971). Structure, stability and fluctuations. *New York, NY: Interscience*.

531 Greve, Arent, & Salaff, Janet W. (2003). Social networks and entrepreneurship. *Entrepreneurship*
532 *theory and practice*, 28(1), 1-22.

533 Haken, Hermann. (2004). An Introduction *Synergetics* (pp. 1-387): Springer.

534 Jansson, Johan, Marell, Agneta, & Nordlund, Annika. (2010). Green consumer behavior:
535 determinants of curtailment and eco-innovation adoption. *Journal of consumer marketing*,
536 27(4), 358-370.

537 Keat, Ooi Yeng, Selvarajah, Christopher, & Meyer, Denny. (2011). Inclination towards
538 entrepreneurship among university students: An empirical study of Malaysian university
539 students. *International Journal of Business and Social Science*, 2(4).

540 Kim, J. , & Mueller, C. W. (1978). Factor analysis: Structural Methods and Practical Issues. *Sage*
541 *Publications, Beverly*, .

542 Kramer, MR. (2011). Creating Shared Value. *Harvard Business Review*, Jan-Feb.

543 Lichodziejewski, Peter, & Heywood, Malcolm I. (2008). *Managing team-based problem solving with*
544 *symbiotic bid-based genetic programming*. Paper presented at the Proceedings of the 10th
545 annual conference on Genetic and evolutionary computation.

546 Lukács, Edit. (2005). The economic role of SMEs in world economy, especially in Europe. *European*
547 *integration studies*, 4(1), 3-12.

548 Maas, Jeroen, Seferiadis, Anastasia A, Bunders, Joske FG, & Zweekhorst, Marjolein BM. (2014).
549 Bridging the disconnect: how network creation facilitates female Bangladeshi
550 entrepreneurship. *International Entrepreneurship and Management Journal*, 10(3), 457-470.

551 Norman, Donald A, & Verganti, Roberto. (2014). Incremental and radical innovation: Design research
552 vs. technology and meaning change. *Design issues*, 30(1), 78-96.

553 O'Murchu, Ina, Breslin, John G, & Decker, Stefan. (2004). *Online Social and Business Networking*
554 *Communities*. Paper presented at the ECAI Workshop on Application of Semantic Web
555 Technologies to Web Communities.

556 Oh, Hongseok, Chung, Myung-Ho, & Labianca, Giuseppe. (2004). Group social capital and group
557 effectiveness: The role of informal socializing ties. *Academy of management journal*, 47(6),
558 860-875.

559 Park, John S. (2005). Opportunity recognition and product innovation in entrepreneurial hi-tech
560 start-ups: a new perspective and supporting case study. *Technovation*, 25(7), 739-752.

561 Pil, Frits K, & Cohen, Susan K. (2006). Modularity: Implications for imitation, innovation, and
562 sustained advantage. *Academy of Management Review*, 31(4), 995-1011.

563 Pringle, Elizabeth G, Dirzo, Rodolfo, & Gordon, Deborah M. (2011). Indirect benefits of symbiotic
564 coccoids for an ant-defended myrmecophytic tree. *Ecology*, 92(1), 37-46.

565 Ries, Eric. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create*
566 *radically successful businesses*: Crown Books.

567 Saari, Donald G. (1977). A qualitative model for the dynamics of cognitive processes. *Journal of*
568 *mathematical Psychology*, 15(2), 145-168.

569 Santos, Filipe M, & Eisenhardt, Kathleen M. (2005). Organizational boundaries and theories of
570 organization. *Organization science*, 16(5), 491-508.

571 Schaltegger, Stefan, Lüdeke-Freund, Florian, & Hansen, Erik G. (2012). Business cases for
572 sustainability: the role of business model innovation for corporate sustainability.
573 *International Journal of Innovation and Sustainable Development*, 6(2), 95-119.

574 Schiepek, Günter K, Tominschek, Igor, & Heinzl, Stephan. (2014). Self-organization in
575 psychotherapy: testing the synergetic model of change processes.

576 Schumpeter, Joseph A. (2017). *Essays: on entrepreneurs, innovations, business cycles and the*
577 *evolution of capitalism*: Routledge.

578 Schumpeter, Joseph Alois. (1965). *Geschichte der ökonomischen Analyse*. 1: Vandenhoeck &
579 Ruprecht.

- Smallbone, Teresa, & Quinton, Sarah. (2004). Increasing business students' confidence in questioning the validity and reliability of their research. *Electronic Journal of Business Research Methods*, 2(2), 153-162.
- Stevenson, Howard H, & Jarillo, J Carlos. (2007). A paradigm of entrepreneurship: Entrepreneurial management. *Entrepreneurship: Concepts, theory and perspective*, 155-170.
- Thompson, Bruce, & Thompson, B. (2003). Guidelines for authors reporting score reliability estimates. *Score reliability: Contemporary thinking on reliability issues*, 91-102.
- Uzzi, Brian. (1999). Embeddedness in the making of financial capital: How social relations and networks benefit firms seeking financing. *American sociological review*, 481-505.
- Vesper, Karl H. (1990). New venture strategies.
- Yen, Dorothy A, Barnes, Bradley R, & Wang, Cheng Lu. (2011). The measurement of guanxi: Introducing the GRX scale. *Industrial Marketing Management*, 40(1), 97-108.
- Yoon, Janghyeok. (2012). Detecting weak signals for long-term business opportunities using text mining of Web news. *Expert Systems with Applications*, 39(16), 12543-12550.
- Zahra, Shaker A. (2005). Entrepreneurial risk taking in family firms. *Family business review*, 18(1), 23-40.
- Zettel, Jörg, Maurer, Frank, Münch, Jürgen, & Wong, Les. (2001). *LIPE: a lightweight process for e-business startup companies based on extreme programming*. Paper presented at the International Conference on Product Focused Software Process Improvement.
- Zhang, WenJun. (2015). *Selforganizology: The Science of Self-Organization*: World Scientific.
- Zhou, Lianxi, Wu, Wei-ping, & Luo, Xueming. (2007). Internationalization and the performance of born-global SMEs: the mediating role of social networks. *Journal of international business studies*, 38(4), 673-690.
- Zimmer, Catherine, & Aldrich, Howard. (1987). Resource mobilization through ethnic networks: Kinship and friendship ties of shopkeepers in England. *Sociological perspectives*, 30(4), 422-445.
- Zimmerman, Monica A, & Zeitz, Gerald J. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of management review*, 27(3), 414-431.