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**ECOLOGICAL PERSPECTIVE OF FIRM'S INNOVATION:
IMPLICATIONS FOR ENTREPRENEURSHIP SUCCESS**

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Abstract

The purpose of this paper is to develop a theoretical framework for clarifying the ecological perspectives of firm's innovation on the basis of earlier studies on entrepreneurship success. In order to achieve this objective, this study has accompanied systematic review of literature related to firm's innovation. This study has used the eco-systemic approach to classify the existing literature and its triangulation. The components and propositions have been obtained through content analysis and synthesis. This study has developed a conceptual framework for the formation of innovation ecosystem around the firm's innovation and entrepreneurship success. In this framework, we identify the main actors; the main expected consequences of actors' interactions and the key mechanisms. Moreover, the key role of the actors, the essence of the interactions' consequences, and the essence of the mechanisms are presented in the form of some propositions. - Some relevant studies might be missing within this study due to the selection of search terms and/or databases. However, by performing a forward and a backward search, we have minimized this error. This framework can be useful for practical implications including policymakers for enhancing the firm's innovation and entrepreneurship success. The value of this paper lies in the integration of scattered previous studies on entrepreneurship success and firm's innovation from ecosystem's perspective

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1. Introduction

Firms are the key groups of actors that perform their greatest role of innovation in current socioeconomic systems. Entrepreneurs are the central portion of the revitalization route that saturate and describe contemporary economies (Kuratko, Morris, & Schindehutte, 2015). Start-up as growing innovative entrepreneurial ventures plays a vital role in country's economic development. They can be driving force for the economy (Kebbi & Valliere, 2016) and energetic apparatus for generating the employment in developing countries (Humala, 2015). While former literature recognizes innovation as a survival premium source and as a forecaster of an above-average post-entry performance (Colombelli, Krafft, & Vivarelli, 2016). In ample circumstances, start-ups by introducing new products and services have led to the economy, employment, sustainable development and social change at large (Fritsch & Noseleit, 2013; Koster & Ste, 2011; Singla, Sethi, & Ahuja, 2018).

Entrepreneurship signifies the utmost serious foundation of cost-effective development in most of the countries (Kuratko et al., 2015). Entrepreneurship success is the major concern of any nation. The literature has widely acknowledged the importance of innovation in achieving the success of entrepreneurship in any country. New methods, new structures, new ideas, and new products are the key drivers of economic growth and organizational vibrancy. The engagement of this modern world can be observed in the unprecedented level of innovative efforts in all types of fields. Modern firms produce and deliver high quality of services and goods across the globe. Such firms are able to identify new markets or extend the existing ones. Thus, innovation is a key source of development and advancement. Firms and nations that are engaged in continuous innovative practices are better enable to manage and sustain economic vibrancy.

2. Problem Statement

In contemporary years, the start-ups have been increasing with a concentration from entrepreneurial, technological, economic, and innovation researchers. Growing credentials on this issue both in books and in journals indicate to this development. The unstructured disseminated knowledge of this upward field and its spreading out necessitates that to be dissected and incorporated. In addition, this field still needs further studies because it is thought-provoking for firms to comprehend how to innovate their business models, categorize and design changes, then evaluate and choose the most acceptable one from sustainable perspective (Evans et al., 2017).

While considering firm's innovation from ecological perspective, this evidences to a sophisticated difficulty related to how to preliminarily assess the impact of the firm's innovations and how to understand their effects on the entrepreneurship success. The purpose of this paper is to present a unified perspective for firm's innovation towards entrepreneurship success leading to better ecosystem approach of firms. The paper proposes a conceptual foundation as a basis for experimentation and exposes the potential benefits of using simulation for the design and evaluation of firm's innovation alternatives by assessing a systematic literature review and synthesize the results in terms of ecological perspective. Researchers have identified that The Theory of the Firm, The Resource Based View and Perspective of a Network Strategy are the most relevant theories under this context of study

2.1. The background

In modern days, firms cannot survive in isolation. Firms' strategies are intermeshed into complex competition's networks. This can be better understood from the ecological perspective of firms' innovation.

2.1.1. Explanation of Ecological perspective

According to the perspective of ecology, successful firms are those which evolve rapidly with their environmental changes. The population ecology suggests that initial entrants face low levels of direct competition in an environment. These initial entrants are known as R-specialists. Due to low population density, firms freely select segments to serve. If they want to serve only a few segments, they are known as R-specialists. On the other hand, if they select a large number of segments to serve, they are R-generalists. It is difficult for firms to change their decisions to serve other segments because their historical investments create barrier to an alternative strategic path which is known as path-dependence. New opportunities emerge with the change of environment that allows new firms to enter in the market. The old firms are then known as K-strategists. The significant opportunity and great uncertainty are the two key characteristics of the early evolution stage. This phase constitutes mainly R-specialists and one or two generalists. The R-specialists are mainly small entrepreneurial firms with limited resources which focus more on small high return segments. Because of this focus, they are better able to survive than generalists that attempt to serve large segments during the period of uncertainty. Moore (1996) introduced familiarised the concept thought of business ecosystem. Moore (2006) has defined business ecosystem as an economic community supported by interactions among individuals and organizations which are regarded as "organisms" of the business world. According to him, business ecosystem includes suppliers, competitors, customers, and other stakeholders such as standard bodies, financing, trade associations, labor unions, and other interested parties. In business ecosystem, firms can better survive for long-run that can be dominant over rival firms within their respective industries. The interactions among these communities take place intentionally or somewhat in an accidental manner. Moore proposed to replace term 'industry' with the term "business ecosystem". Core capabilities are the basis of business ecosystems. The core capabilities are exploited to produce product.

2.1.2. Stages of Life-Cycle of a Business Ecosystem

There are four stages in the life-cycle of a business ecosystem. For instance, (i) birth stage; (ii) expansion or growth stage; (iii) leadership or maturity stage; (iv) self-renewal or death stage. The network strategies used by firms in business ecosystem are different at these four different stages. These are explained as below;

2.1.3. Birth stage

In the birth stage, it is essential for firms to put more efforts to do establishments in business ecosystem. At this stage, firms are required to do more than just satisfying the customers. For example, they need to identify their critical resources to run their businesses, such as finance or capital, skills, expertise etc.

2.1.4. Expansion or Growth Stage

The firms that equip themselves with required capabilities and other resources are able to enter into the second stage. Only well-established firms can attain the stage of growth or expansion. This stage is characterized by the intense competition among rival firms. The ecosystem leaders strive to attract and retain their suppliers, customers, and other key partners. At this stage, the successful firms may be able to get monopoly in market or intense rivalry continuous among the existing firms within business ecosystem. This stage requires two conditions to be fulfilled. Firstly, a large number of customers who give value to the firms' products or services. Secondly, the firms must be able to fulfill the demands of the mass market segment. Another task includes the firms' efforts to stimulate the demand for their products or services at such rate that do not exceed their capabilities to meet it. This is the stage of rapid expansion which enables the firms to enter the stage (3).

2.1.5. Leadership or Maturity Stage

At this stage of business ecosystem, firms reach stability and high profitability. Firms get the position of leadership due to the control over critical resources as well as core value adding activities of innovation. To attain the ecosystem leadership position, firms have to cultivate the bargaining power. This requires the firms to control over critical activities that cannot be easily copied or substituted by others within business ecosystem. This can be achieved through continuous process of innovative activities or practices by the firms. Thus, innovation plays a major role in maintaining the leadership position for firms in the third stage.

2.1.6. Renewal or Death Stage

The renewal stage occurs when the ecosystem matures and faces severe threat from new innovations. Firms have few options of renewal at this stage. For example, firstly, they may attempt to stunt new innovations' development and development of new ecosystem. Secondly, they may incorporate these innovations into their own ecosystems. Thirdly, they may restructure or perhaps exist their current business ecosystem.

3. Research Questions

The study endeavours to answer the following research questions:

- (a) Does Stages of Life-Cycle of a Business Ecosystem affect the Entrepreneurial Success?
- (b) Does Stages of Life Cycle of Business Eco-System affect Firm's Innovation?
- (c) Does Firm's Innovation affect the Entrepreneurial Success.

4. Purpose of the Study

The purpose of the study is to perform a systematic review of specialized literature in order to answer the research questions and at the same time to look at some major issues in relationship among ecological perspectives of firm's innovation on the basis of earlier studies on entrepreneurship success.

5. Research Methods

Science is the consequence of the accumulation of knowledge over time and it acts as continuously to invent the current collective achievements. A systematic literature review is a process that supports us to treasure new facts from existing knowledge. In this regard, scholars have discussed innumerable but comparable approaches. However, the researchers have followed the approach proposed by Onwuegbuzie and Frels (2016). Their suggested approach contains the three stages of exploration, interpretation, and communication, the first stage consists of five phases and the other two levels, each performed by single pace. The researcher also accompanied investigation stage by penetrating, classifying, assessing, accommodating, and consolidating in order to access appropriate studies.

In the first phase, the researchers pore over the subject from the viewpoint of pertinent extents and developed research questions that decreed the assembly of papers and elucidations. Consequently, related areas of the subject are entrepreneurship, innovation, start-up, and technology. The three guiding questions that follow from the eco-perspective are: 1-What are the main players who move the firm innovation and what are their main roles? 2-What are the main expected consequences of players' interactions? 3-What are the key mechanisms in firm's innovation development? In the second step, researchers documented the prospective literature databases and then they accomplished initial searches to limit the keywords. In the first round, databases were Scopus and Web of Science and in accompanying searches (step five), Emerald, Springer, ProQuest, ScienceDirect, Jstor, and Wiley added. Keywords in the below combination were the search query in Web of Science Advanced Search tool and similar phrases were used in other databases (The "*" sign was used at the end of some keywords to extend the range of possible words since many papers apply slightly different words for the same concept).

FI= ("innovation*" OR "firm innovation") AND innovat*) AND TI=("start-up*" OR startup OR "start-up*" OR "new venture*" OR "new entrepreneur*" OR "nascent entrepreneur*" OR fast-grow* OR life-cycle* OR incubator OR acceler* OR Ecosystem) AND WC=(Business OR "Business, Finance" OR "Operations Research & Management Science" OR "Technology OR Science & Technology Other Topics" OR "Social Sciences" OR "Business & Economics") AND PY=1997-2017. The third step is storing and organizing of the obtained documents in Mandalay, 1.17. Because of alternately repeated steps 3, 4 and 5, we here first describe step five and then step four. The fifth step is to revise and expand the search. By implementing this step several times, we inspected the outcomes, probabilistic gaps, changes and extensions of the search areas. This led to the addition of databases, search by topic rather than title and dedicated search in some details, and eventually increasing the volume of documents. In total, the initial number of documents from the third and fifth stages after the removal of duplicates was 1232.

In the fourth step, current study sets the criteria for the selection or rejection of the papers and reduced the data based on them in several stages. The first criteria were the title, which remained 580 cases after removing unrelated cases. Subsequently, the abstract of the remaining items was studied which remained 334 cases after removing unrelated or useless items. Then, by examining the samples and methodology of the remaining documents and removing non-start-up cases, researchers accepted 182 items and studied them in full. Finally, from the cases fully studied, after removing low-quality items, the researcher accepted 84 documents that underlie the development of our framework. The second phase, which is the sixth step, is an interpretation. In this step, the researchers analysed and synthesized the content

of accepted papers. They are two related but essentially different processes; in the analysis, the information is broken up, separated from each other and grouped into similar categories based on similarities. In synthesis, the obtained information is purposefully combined and then shared themes are extracted. Indeed, in analysing the process the emphasis is on the separation and finding of components, while in synthesizing, we are trying to achieve a generalized construction from extracted components.

To implement this step, current study used content inductive analysis technique. This non-interventional technique attempts to find and organize the scattered and apparently disparate achievements of various texts related to a subject to create new and transferable deductions and conceptual maps (Krippendorff, 2013). During the study of documents, this study extracted codes in relation to the topic with the help of analysis questions and simultaneously collected them in the primary tables. Then, by deepening and repeatedly readout of the codes and by comparing them together, we identified the concepts and patterns in the form of new categories and tables. The derived categories and sub-categories are the main components of our framework. We then reviewed the code for each category and extracted its potential themes. We revised these themes for several times, and corrected them in the case of non-compliance, and eventually labelled them. The sub-categories and themes are reported separately or in the form of a single proposition, which is the seventh step of this methodology

5.1. Theoretical Framework

The present research work anticipates endorsing to this anticipation of ecological perspective of firm's innovation by considering the relationship stuck between stages of life-cycle of a business ecosystem and sustainable entrepreneurship success. There is a dearth of entrepreneurship success literature on the belongings of specific ecological perspective of firm's innovation (Achmad, Saputro, & Handayani, 2016; de Oliveira Brasil, Sá de Abreu, da Silva Filho, & Leocádio, 2016). Another weakness of the conceptconception is that the majoritywidely held of the earlier studies literature isare based on a relatively narrow conceptionoutset of innovation (Autio, Kenney, Mustar, Siegel, & Wright, 2014). Hence, this study is an endeavor to resolve this research gap with the main focus of entrepreneurial success

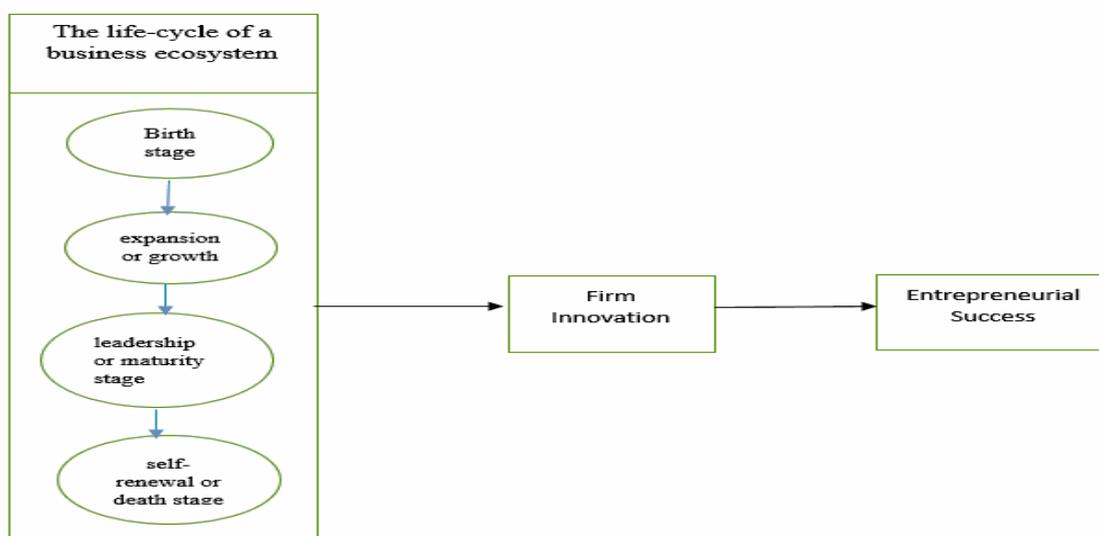


Figure. 01. Theoretical Framework

Figure 01 illustrates the theoretical framework that helps us to gain insight into the relationship of the life-cycle of a business ecosystem, firm's innovation, and entrepreneurial success. However, there is a lack of overarching frameworks that discuss the dynamics that shape the emergence and evolution of entrepreneurial ecosystems over time, when different forms of life cycle designs are in place. According to Hopp & Sonderegger (2015), research on entrepreneurial success is currently undertheorized and less, and this points out the need to develop a coherent theory on the way entrepreneurial organizing activities and the combined impact on founding success. Thus, several gaps have been found in the previous literature on the life-cycle of business eco-system, firm's innovation and entrepreneurial success. In this section, we propose a conceptual framework, and we discuss what type of life cycle design would best fit the needs of a business ecosystem during its evolution. By means of a set of propositions, the conceptual framework has been developed by combining the literature on stages of business eco system and firm's innovation and the literature on entrepreneurial success. The framework constitutes a basis on which alternative analyses may be built.

6. Findings

6.1. Development of Propositions

6.1.1. The Relationship between Stages of Life Cycle of Business Eco-System and Entrepreneurial Success

The symbol or meme of “ecosystems” has turn out to be popular in academia, industry, and government, thereby apprehending collective attention in both more developed and transforming economies around the creation of innovative products and services, leading to wealth creation and competitiveness (Colombo, Dagnino, Lehmann, & Salmador, 2017). The extant research has provided some valuable insights into the life cycle of entrepreneurial ecosystems and their adaptive evolution (Colombelli et al., 2016; Strobl & Kronenberg, 2016). Some observers have noted that life-cycle of business eco-systems have an evolutionary and dynamic nature (Fritsch & Noseleit, 2013). The evolution of life-cycle of business over time generally entails significant changes that could lead to multiple outcomes. Thus, life cycle of business ecosystems appears to be a highly multicolored, multi-actor and multi-scaler phenomenon (Muzellec, Ronteau, & Lambkin, 2015). Scholarly attention has also been focused on the processes that guide the life-cycle of business ecosystem's evolutionary pathway, which are grounded on ecological and evolutionary theories of life cycle dynamics in social systems. Start-up of new ventures is a planned activity (Johara, Yahya, & Tehseen, 2017). A number of studies have analysed the relationship between life cycle of business eco-system and entrepreneurial success (Colombelli, Paolucci, & Ughetto, 2017; Hopp & Sonderegger, 2015; Klewitz & Hansen, 2014). Therefore, the relevant proposition is as follows:

Proposition1: A positive relationship exists between the life cycle of business eco-system and entrepreneurial success.

6.1.2. The Relationship between Stages of Life Cycle of Business Eco-System and Firm's Innovation

Businesses deliver indispensable ingredients of our lives by creating our economic, political, cultural, and personal and social environments. The lack of case studies makes it challenging for firms to understand how to innovate their business models, identify and design alternatives, then assess and select the most adequate one (Evans et al., 2017). Scientists and researchers argue that, comparable to life forms, various established enterprises are “born” and eventually “die” (Belak, 2016). Several authors refer to various life cycle stages of business eco-system, within which they describe different characteristics (Roscoe, Cousins, & Lamming, 2016; Strobl & Kronenberg, 2016). On the contrary, innovation was first and clearly characterized by Schumpeter in his study “Theory of Economic Development”, first published in 1911 in Austria (Pacheco et al., 2017). According to the author the first studies on innovation date back to the propositions made by Schumpeter (1908, 1911, 1942). When considering business model innovations for sustainability, this leads to a higher complexity related to how to preliminarily assess the impact of the sustainability innovations and how to understand their effects on the whole business network (Evans et al., 2017). A number of studies (Cai & Zhou, 2014; Evans et al., 2017; Roscoe et al., 2016) have mentioned about the life cycle of business eco-system and firm's innovation. Therefore, the following proposition has been developed in this regard:

Proposition 2: A positive relationship exists between the life cycle of business eco-system and firm's innovation.

6.1.3. The Relationship between Firm's Innovation and Entrepreneurial Success

William Baumol (2002) contended that entrepreneurial innovation was the exact source of nationwide competitive advantage. The firm's innovation has been strongly associated with entrepreneurship in under various contexts and different countries have formulated effective policies to stimulate innovation by entrepreneurial firms, in the hope of facilitating economic growth. A number of studies have found that eco-innovation has a positive and significant impact on a company's growth (Autio et al., 2014; Cheng, Yang, & Sheu, 2014; Hojnik & Ruzzier, 2016). Cheng et al. (2014) found that eco-organizational innovation has the strongest consequence on business performance. Successful eco-innovation implementation may also result in gaining competitive benefits (Sharma & Vredenburg, 1998). Klewitz & Hansen (2014) explored the details of how SMEs innovate at the process, the product, or the organizational level. So, the proposition can be formulated as follow:

Proposition 3: A positive relationship exists between the firm's innovation and entrepreneurship success.

7. Conclusion

One fundamental intention of a systematized literature review is to recommend concerns for future research, the present study intends to develop a hypothetical background for clarifying the ecological

perspectives of firm's innovation on the basis of earlier researches on entrepreneurship success. Although entrepreneurship success is a comprehensive research area, still many scholars are suggesting ways to improve the success issues as this is serious and should be resolved (Achmad et al., 2016; Hassani, 2013). Academic researchers also suggested that ecological perspective of firm's innovation could have an enormous influence on the success of entrepreneurship (Klewitz & Hansen, 2014). In today's extremely competitive business environment, ecological perspectives of firm's innovation are becoming more important. Furthermore, the recent researches in ecological perspective of firm's innovation have concentrated on the collection not by existing large companies, but by new small firms (Cheng et al., 2014). In generous surroundings, start-ups by familiarizing new products and services have led to the economy, employment, sustainable development and social change at large (Fritsch & Noseleit, 2013; Koster & Ste, 2011; Singla et al., 2018). In short, this study proposed the inter-relationships and contributions of the life-cycle of business eco-system, firm's innovation, and entrepreneurial success. The synergetic mechanism acknowledged in the present study might support entrepreneurs in gaining an integral consideration of the concept of ecological perspective of business and its implementation for improving their success.

The proposed framework may thus provide an actor-centered basis for future empirical research on entrepreneurial ecosystem, in particular in balancing and evaluating the associated costs and benefits in firm's innovation and entrepreneurship success. While in the last few years, the entrepreneurial ecosystems have become pretty popular in academia, and it still remains a practitioner-centered field of interest with still limited theoretical, empirical, and conceptual body of inquiry underpinning the key phenomenon. A facet that has been almost ignored in the previous studies regards the question of the life-cycle of business eco-system and firm's innovation to the boundary of the entrepreneurial success. Future research should also tackle the determinants of firm's innovation by formalizing multi-principle and multi-agent difficulties, hypothesizing the relationships between different influential settings and rights, and emerging performance' measures surrounding the costs and benefits spreading out from the direct participation in an ecological perspective.

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