

The Understanding of Technology Entrepreneurship According to Shariah Principles

Dr. Syahida Abdullah¹ and Dr. Lahsasna Ahcene²

¹University of Kuala Lumpur (UniKL), Malaysia

Email: syahida@ise.unikl.edu.my, syahida24@yahoo.com

²INCEIF Email: hasan@inceif.org

Abstract. Technology entrepreneurship, a relatively new term is receiving increasing recognition from the scholars of various streams of business and science and technology disciplines, as well as from the industry players and business men practically. Technology entrepreneurship is indeed becoming vital in the current globalization and liberalization economy as it provides greater opportunities and enables effective optimization of resources to attain high profit margins. This paper presents theoretical understanding of technology entrepreneurship using Shane and Venkataraman (2003) definition of technology entrepreneurship and analysed it through the lens of Islamic principles. The technology entrepreneurship factors are analysed using eight key dimensions: awareness and search from the context factor; strategy and core competency from the firm factor; technology paradigm and linkages from the technology factor; and learning and leadership from the entrepreneur factor; and also from Shariah aspects that represent high values in the conduct and behavior of Muslim entrepreneur. This study believes that the proposed framework adds to the existing literature on entrepreneurship and Islam.

Keywords: Entrepreneurship, Technology, Innovation, Islam, Mudarabah, Mudarib and Shariah.

1. Introduction

Technology entrepreneurship is basically the merge of two words from two disciplines: technology from the innovation discipline and entrepreneurship from the business discipline. Technology entrepreneurship is thus understood in this study as the integration of technological and entrepreneurial realms. Islamic technology entrepreneur then is described as individual who carries out entrepreneurial activities that are technology oriented within the framework of Islam. Hence, Islamic technology entrepreneurship is referred to the capabilities of a technology entrepreneur, specifically the knowledge and skills required by the entrepreneur to carry out technology based entrepreneurial activities successfully according to the permissible way of Islam.

Having defined the relevant terms, this paper continues with a discussion on the different fields of study involved, or in another words, the inter-related disciplines, namely entrepreneurship and innovation. A review on the pertinent literature covering the major issues emanating from the innovation discussion, notably technology and technology capability are presented. Consequently, the framework for the emerging field of technology entrepreneurship is discussed according to Islamic principles, followed by a brief summary in the final part of the paper.

2. Literature Review

This section provides a review of relevant literature that is pertinent to this study; the main themes include entrepreneurship, innovation, mudarabah, mudarib, and Shariah.

2.1. Entrepreneurship

An enormous collection of literature exists in the field of entrepreneurship; it has been dealt with extensively by numerous scholars from various disciplines such as sociology, psychology, and economics. On the relation to personality traits, behavior, social and environmental influences, Weber (1930) is among the early authors who have discussed entrepreneurship in terms of behavior where a value system is regarded as essential to an entrepreneur's behavior.

McClelland (1961; 1971) explored psychology to explain an individual's need for achievement as the motivational factor that led entrepreneurs to perform better. Chandler and Redlick (1961) recognized skills and motivation as factors towards achieving entrepreneurial success. According to Johnson (2001) entrepreneurial behavior also refers to openness to new information and people, motivation, and making independent and self-directed decisions. A study by Filion (1997) associated entrepreneurs with environment; for instance, entrepreneurs are regarded as a reflection of the characteristics of a period and place that they are accommodated (McGuire, 1964, 1976; Toulouse, 1979; Newman, 1981; Gibb and Ritchie, 1981; Ellis, 1983; Filion, 1991; Julien and Marchesnay, 1996).

From the standpoint of economics, there are a number of authors who associate entrepreneurship with innovation. The pioneers in this field such as Cantillon (1755) and Say (1803) viewed entrepreneurship as a risk-taking activity. Subsequently, Schumpeter (1928) introduced a new notion to the field of entrepreneurship, namely "innovation". He viewed entrepreneurship as a dynamic process of creative destruction, in which he put forward the idea of innovation that changes the basic technological and demand parameters of the economy (Schumpeter, 1943).

According to Islam, entrepreneurship is defined as a skillful person who undertakes the management for carrying on any venture, trade, industry or service with the objective of earning profit for the benefit of the partnership according to the contract agreement. Historically the entrepreneurship is understood under the context of *mudarabah*. *Mudarabah* is one of the financial contact in Islamic commercial law which has a concept of profit sharing with the combination of few major components consists of capital provider, who is *Rabu Al Mal* and labour skill of the work person who is the *Mudarib* or entrepreneur. Therefore, its scope is confined to the rule and regulation of *mudarabah*, however in the modern Islamic context without taking into account *mudarabah* as model for entrepreneurship, the concept will be wider and entrepreneurship accommodates other rules and regulation and roles in the market. As such, the entrepreneur will not only be a skillful person who provides his business experience and market knowledge without participation in capital, but includes as well individuals or partners who undertakes a venture by formulating a sound organization, appropriate business plan and business management to venture in the market by providing services or industry to generate a permissible profit within the rules and regulation of *Shariah* and Islamic commercial law.

2.2. Innovation

Innovation is defined by Schumpeter (1950) as the creation, development and introduction of new products, processes, systems and organizational forms. Schumpeter (1939) treats innovation activity as an internal factor in economic change. His theory of economic change on the role of innovation and the entrepreneur was outlined in the 'Theory of Economic Development (Schumpeter, 1934)'.

In this book, Schumpeter (1934) identified five ways of revolutionizing the pattern of production, that is, the introduction of a new product to the consumers, the introduction of a new production method, the exploitation of a new market, the utilization of a new source of supply of raw materials or partly manufactured goods, and the implementation of a new way of organization.

Thus, in undertaking an innovative endeavor, a great deal of information is needed on a variety of subjects such as the market situation, new technological developments, sources of technical assistance, government promotional measures, etc. (Rothwell and Zegveld, 1982). Among these various subjects, technology is regarded as one of the crucial components in an innovation activity; technology has often been perceived as a function of innovation in creating new things and in matching it with market needs. Indeed, the focus on technology as a significant factor in Schumpeter's notion of innovation is also emphasized by other scholars (Freeman, 1998). Freeman recognized that innovation is developed from technology and an outcome of new scientific results.

2.2.1 Technology

Technology is defined as the ability to carry out productive transformation, and includes the ability to act, and a competence to perform; technology transforms materials, energy and information from one state to another value-added state (Metcalf, 1995). Twiss and Goodridge (1989) viewed technology as a powerful resource in gaining competitive advantage. Schumpeter's theory of economic development reflects that technology is driven by entrepreneurs, and it is the entrepreneur who plays a major role in creating inventions through the appropriate implementation of technology (Schumpeter, 1912).

In addition, Dopfer (1992) defined technology as an engine of growth, and its application is seen in the branch of Neo-Schumpeterian research like Technological Paradigm (Dosi, 1988), "focusing devices" (Rosenberg, 1976), "Technological Trajectory" (Nelson and Winter, 1977), and others.

Technology has been considered as knowledge, as skills and as artifacts by Layton (1974). In this respect, technology is deemed to have its own specific framework of concepts, ideas and relationships within which it develops over time, and that this framework is reflected in a division of innovative expertise between the various institutions which support that technology (Constant, 1980; Laudan, 1984; Vincenti, 1990).

These studies clearly show that technology carries a comprehensive definition which is understood as 'a body of knowledge, tool and techniques, derived from both science and practical experience that is used in the development, design, production and application of products, processes, systems, and services' (Abetti, 1989). For the purpose of this study, technology is essentially viewed as the tool that enables the entrepreneurial activities to be carried out effectively within the Shariah principles.

2.2.2 Technology Capability

As technology has become increasingly important in today's age of globalization and transformation, the concern then is on acquiring technological capability to achieve competitiveness. UNIDO (1986) looked at technological capability as the ability to train manpower, ability to carry out basic research, ability for testing basic facilities, ability to acquire and adapt technologies, and ability to provide information support and networking. The World Bank (1985) has categorized technological capability into three independent capabilities: production capability which consists of production management, production engineering, maintenance of capital equipment, and marketing of produced output; investment capability which consists of project management, project engineering, procurement capabilities, and manpower training; and innovation capability which creates and carries new technical possibilities for profit-making purpose.

Besides the definitions above, there is another study that categorized technological capability into six major areas: production capability, investment capability, minor change capability, marketing capability, linkage capability and major change capability (Ernst et al., 1998). Lall (1990) defined technological capability as the required human skills such as entrepreneurial, managerial and technical to set up and operate industries efficiently; there are two levels of technological capabilities identified: firm and national.

At firm level, Lall (1990) noted the requirement for three types of capabilities; namely entrepreneurial, managerial and technological capabilities. In terms of technological capabilities, he identified three elements: investment, production and linkages. Investment capabilities involve the skills required to utilize the invested resources effectively; production capabilities include all the necessary skills required to carry out the product, process and industrial engineering activities; and linkages capabilities is the skills necessary for transferring knowledge and technology infrastructure. Meanwhile, at national level, Lall (1990) referred to the incentives provided, supply of skills, and efforts to master, adapt and improve technologies, and institutions to support market functions.

Thus, it is hoped that the elucidation of various definitions and different classifications of technological capabilities as presented above provide valuable insights into the major theme of this study, and simultaneously pave the way for a better understanding of the significant terms applied in this study, namely Islamic technology entrepreneurship.

3. Methodology

In drawing the Islamic technology entrepreneurship framework, first the Shane and Venkataraman definition of technology entrepreneurship and the World Bank framework was applied to this study. The framework introduced by Bessant et al. (2000) was improvised according to the research context in order to meet the objectives of this study. Eight key technology entrepreneurship activities were identified based on the four constituencies of technology entrepreneurship as highlighted by Shane and Venkataraman (2003) in their special issue on technology entrepreneurship, which includes industry, firm, technology and entrepreneur. However, the term 'industry' is replaced with 'context' as it is regarded more suitable in this study.

The 8 key dimensions of technology entrepreneurship are: awareness, search, strategy, core competency, technology paradigm, linkages, learning, and leadership. 'Awareness' is referred to the ability to recognize pertinent environmental changes, and the need to improve; 'search' is the ability to explore for opportunities and threat; strategy is the plan of action to achieve the envisioned goals that are significant for the economic growth of the firm; core competency is the economic strength of the firm that needs to be identified and built upon; technology paradigm is the ability to understand the existing platform of technology; linkages is any form of collaborative effort established by the firm; learning is the firm's effort to encourage acquisition of codified and tacit knowledge on continuous basis; and finally leadership is the ability of the entrepreneur to lead his firm to achieve competitive advantage and sustain it.

Then, these 8 key dimensions are weighed in accordance to the values and ethics of Islam, including honesty (Siddiq), wisdom or knowledge (Fatanah), trust (Amanah), and deliver and sharing (Tabligh) to ensure that the entrepreneurial activity is carried out permissibly according to the Shariah principles. These keys are values that govern the conduct of the entrepreneur in carrying out his business activities, and dealing with other parties, honesty is an Islamic value which demonstrates a high level of integrity and truthfulness, with total absence of negative attribute such as lying and cheating. This concept is highlighted by the Quran, Allah says: "Truly, Allah does not guide one who transgresses and lies." (sura: 40:28), in addition to that, Sunnah emphasizes on the same concept, the Prophet says: "Be honest because honesty leads to goodness, and goodness leads to Paradise. Beware of falsehood because it leads to immorality, and immorality leads to Hell." (Hadith). Therefore the entrepreneur should demonstrate honesty in his business and dealing with others by being transparent in disclosing the information related to his business, avoiding fraud, manipulation and cheating.

Wisdom or knowledge (Fatanah) is a deep understanding of people, things, events or situations, resulting in the ability to choose or act or inspire in order to consistently produce the optimum results with a minimum of time, energy or thought. The wisdom and fatanah gives the entrepreneur effectiveness and efficiency in carrying out his business and organization to achieve the desired results. This value is obtained through experience and complete maturity, showing the competency in handling the business affair and dealing, the assumption is that the entrepreneur should be smart and very knowledgeable in carrying out his entrepreneurial activities to sustain his business.

Trust or amanah has very important value in Islam; the Quran has been extensively addressing the importance and necessity of trust in the daily affairs of every individual. Allah says: Verily, Allâh commands that you should render back amanah (the trusts) to those, to whom they are due; and that when you judge between men, you judge with justice. [4:58]. Quran regarded amanah as one of the major principles in Shariah which must be taken into consideration in all aspect of life, it is not restricted to business or finance but it goes beyond that to include the daily Muslim activity. From an Islamic perspective the entrepreneur is entrusted on what he has in hand, the capital, the business, wealth, property and the entire organization are regarded as amanah in his hand and under his custody, part of his mandate is to ensure the preservation of the wealth, capital and the business that he is carrying out, otherwise he will be regarded as usurper. In fact amanah in entrepreneurship is related to the position of the entrepreneur it self which is consider as amanah because one of the meanings of amanah is to choose the right person for the right position and work, therefore the entrepreneur is trusty person because a crucial task has been handed over to him, he should be up the challenge of the responsibility and execute his task in perfect manner in order to demonstrate the value of the amanah.

The value of deliver and sharing is known as Tabligh which is part of the ethics attributed to the entrepreneur. By virtue of this value, the entrepreneur will be regarded as a source of reference for high good conducts and ethics in the market. Having possessed this principle, he is required to deliver and convey good ethics and values, which can be observed through his speech, deed, and actions in his dealing with others in his business endeavor. In fact, Tabligh demonstrates the previous values attributed to him such as trust and honesty, in which these values are conveyed to other partners and individuals in the market place through the act of Tabligh

Hence, the above mentioned values should be observed in the entrepreneurship realm, including technology entrepreneurship in order to ensure quality of performance, delivery and success in this world and the world hereafter which is the aim of every Muslim.

4. Conclusion

Technology entrepreneurship is a relatively new field of study; as such, there is relatively limited literature in this discipline, notably in Malaysia. Therefore, this study has made an attempt to explore this emerging topic to add to the limited literature in this relatively unexplored field of study. To facilitate a better understanding of this new discipline, relevant terms such as entrepreneurship, innovation, and technology have been defined prior to explaining the main term in this study, Islamic technology entrepreneurship.

In traditional literature on entrepreneurship, the emphasis is on the entrepreneur, including his personality traits, behavior, and social and environmental influences, or rather the concentration of entrepreneurship literature then was 'person-centric'. It was Schumpeter (1928), who introduced a new idea in the entrepreneurship discipline, which is innovation. He added a new attribute to the term 'entrepreneur', and was able to change the basic parameters of entrepreneurship. Schumpeter's entrepreneur is one who has technical knowledge and is held responsible for applying it; the entrepreneur is not merely an inventor but one who is responsible for bringing the innovation to the market to achieve competitive advantage. Having noted his notion, this study defines technology entrepreneur according to Islamic lense as one who has the capability and skills to acquire knowledge, innovative skill and entrepreneurial talent, and apply them according to the principles of Islam for a firm's sustainable performance. Hence, technology entrepreneurship according to Islam is creation of a sound business organization by a skillful person equipped with high value and ethics of trust, honesty, knowledge and sharing of it within an appropriate structure, strategy and management based on effectively drafted plan, namely business plan so as to be able to run the business and generate profit in permissible way within the Shariah rules and regulation.

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