

TECHNOLOGY IN ENTREPRENEURSHIP MANAGEMENT

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ABSTRACT

Technology in entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets to create and capture value for the firm. Technology entrepreneurship lies at the heart of any important debates including those around and growing firms, regional economic development, selecting the appropriate stakeholders to take ideas to markets, and educating managers, engineering and scientists. This work is carried out in a way to identify the themes that dominate the technology entrepreneurship literature. This study provides a definition of technology entrepreneurship. What distinguishes technology entrepreneurship from other entrepreneurship types (e.g.) social entrepreneurship, small business management, and self-employment which is the collaborative experimentation and production of new products, assets, and their attributes, which are related to advances in scientific and technological knowledge and the firms asset ownership right.

Keywords: Technology, Entrepreneurship, Self-employment

Introduction

Technology entrepreneurship in a production of raw material is a vehicle that facilitates prosperity in individual firms, regions and nations (at large). The study of Technology Management Development in Production of some raw materials. Therefore, it serves as an important function beyond satisfying intellectual curiosity. Previous definitions from the literature do not explore and identify the ultimate outcome of technology entrepreneurship management, the target of the ultimate outcomes, the mechanism used to deliver the ultimate outcomes; in or the nature of the independence between technology entrepreneurship and scientific (managements) and technological advances.

Moreover, a new definition should explicitly link technology entrepreneurship to the theory in (food and raw material production) entrepreneurship theory and management theory. Technology in entrepreneurship management in the production of raw materials is examined, and various definitions of technology entrepreneurship is proposed and its distinguishing aspects discussed. The last section provides the conclusions. Overview of (literature or methodology research).

Technology in entrepreneurship can help in various ways: It educates and encourages launch of new ventures, also technology in entrepreneurship refers to processes by which entrepreneurship use resources and technical systems through collaborative exploration and experimentation to pursue opportunities. Technology has important effects on business operations. No matter the size of your enterprise, technology has both tangible and intangible benefits that will help you to make more money and

produce the results your customers are demanding for. Technology infrastructure affects the culture, efficiency and relationships of a business.

Entrepreneurship can be used in the following ways:

1. It can be used in the manufacturing of goods and services such as raw materials.
2. Improving the customer care services.
3. It is used in transportation.
4. It can be used in human resources management.
5. Technology is also used to improve their services or products as a way of gaining competitive advantage.

Key Findings in Relation to Technology in Entrepreneurship Management.

1. The majority of technology in entrepreneurship articles are published in journals not contributed to technology in entrepreneurship management. To include more journals in the list of "good journal", dropped the requirement that the journal be included in the financial Times Top 45 journal's list. When we released the criteria for a "good entrepreneur". They are: Research Policy (1) R&D management (4) Journal of Business Venturing (3) International Journal of Technology management.
2. IEEE Transactions on Engineering management (1) Entrepreneurship Theory and Practice.

These findings suggest that technology in entrepreneurship is still relatively new field of study. The number of scholars publishing articles about technology entrepreneurship in top journals remains quite small according to (Landenberg and Foss, 2011).

Technology entrepreneurship is about investing in and executing the firms' projects, not just recognizing technology or market opportunities.

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Existing definitions:

Six definitions of technology entrepreneurship were found in the 93 articles reviewed:

1. Organization, management, and risk bearing of technology based business (Nicholas and Armstrong; 2003)
2. Solutions in search of problems (Venkataraman and Sarasvathy, 2000)
3. Establishment of new technology ventures (Jones-Evans, 1995)
4. Ways in which entrepreneurs manage its resources and structures to exploit a merging technology opportunities (Liu et al., 2005)
5. Joint efforts to interpret ambiguous data, joint understanding to sustain technology efforts, and persistent, coordinated endeavor to accomplish technological change (Jelinek, 1996)
6. An energy that is distributed across different kinds of actors, each of which involved in technology and, in the process, generates inputs that result in the transformation of an emerging technological path.

(Garud and Karnoe, 2003).

The definitions found on literature suggest that technology entrepreneurship is about:

1. Operating small business owned by engineers or scientists
2. Finding problems or applications for a particular technology
3. Launching new ventures, introducing new applications, or exploiting opportunities that rely on scientific and technical knowledge
4. Working with others to produce technology change.

The proposed definition of technology in entrepreneurship is based on four elements:

1. **Ultimate outcomes:** value creation and capture are identified as two outcomes of technology entrepreneurship because the sources that create value and the sources that capture value may be the same over the long run.
2. **Target of the ultimate outcomes.** The firm is identified as the target organization for which value is created and captured.
3. **Mechanism used to deliver the ultimate outcomes.** Investment in a project is the mechanism mobilized to create and capture value. A project is a stock of resources (i.e., specialized individuals and heterogeneous assets) committed to deliver the two ultimate outcome types for a period of time.
4. **Interdependence of the mechanism with scientific and technological advances.**

The individuals involved in a project influence and are influenced by advances in relevant scientific and technological knowledge. External and internal individuals and organizations co-produce the project's outputs.

When compared to the definitions identified in the previous section:

1. It emphasizes that technology in entrepreneurship is about creating and capturing value for the firm through the projects that combine specialists and assets to produce and adopt technology
2. It highlights the collaborative experimentation and production of new products, new assets, and their attributes, which are intricately linked to scientific and technology advances and the firm's asset ownership rights
3. It specifies that technology entrepreneurship may entail projects that search for problems or applications for a particular technology, launch new ventures, introduce new applications, and exploit opportunities that rely on scientific and technical knowledge provided that their ultimate outcome is to create and capture value for the firm
4. It clarifies that technology in entrepreneurship is not about the general management practices used to operate small businesses owned by engineers or scientists or just about small businesses.

Differentiating Aspects of Technology Entrepreneurship Management:

There are at least five differentiating aspects of technology entrepreneurship in the definition proposed above

1. How technology entrepreneurship differentiates from other entrepreneurship type.

The interdependence between scientific and technological change, as well as the selection and development of new products, assets, and their attributes, differentiate technological in entrepreneurship management from other entrepreneurship types. Technology in entrepreneurship management has more to do with collaborative production based on a shared vision of future changes in technology. The existing entrepreneurship literature, however, describes an entrepreneur as:

- i. An alert individuals discovering an existing opportunity
- ii. An innovative individual who shakes the economy out of its previous equilibrium.
- iii. An experienced individual making judgments about an unknowable future.
- iv. An individual who believes she has lower information costs than others.
- v. An individual with certain personality traits. A shared vision of change in technology influence why, when, and how a firm create and capture value. important to develop shared views of change in technology.

2. Eliminating the existing method of the entrepreneurship literature.

The proposed definition eliminates three biases of entrepreneurship research:

- i. Concentration on new firm formation;
- ii. Focus on individual entrepreneurship;
- iii. Over-attention to opportunity discovery

Technology entrepreneurship is about collaborative production decisions, not about a single individual making or delegating decisions. So this will also help to create and capture value for the firm. The specialized individual and assets can be held by a single entrepreneur manager or can be distributed.

Technology in entrepreneurship involves specialized human resources, tapping into their skills and ability to collaboratively explore and explicit scientific and technological change to benefit the firm. Technology entrepreneurship is best understood as a joint-production phenomenon that draws from a team of specialized individuals from multiple domains, some or all of whom became embedded in the technology path they try to shape in real time individual or the inventions they introduce. It is about managing joint exploration and exploitation, where each individual has role and responsibilities in collaboratively and cooperatively moving forward toward accomplishing shares.

3. A more theoretically rigorously and practical definition:

Considering technology entrepreneurship as an investment in a project rather than a subjective opportunity allows it to be accessed in more theoretically rigorous and practical terms. The proposed definition links technology entrepreneurship to an amount of money (i.e. investment in the project). Ideas are more parlor games until money is part of a project (Rothberg, 1985).

4. Linking technology entrepreneurship to the theory of sustainable competitive advantage:

Technology entrepreneurship and the resource-based view of sustainable competitive advantage are interdependent because they are both concerned with how to create and capture value. Both pay explicit attention to how resources that embody technology scientific advances creates and capture

values while technology entrepreneurship applies to any firm with project that rely on advances of science and technology, the resource-based view applies to those few firms that are continuously successful.

5. Linking technology entrepreneurship to the theory of the firm

The technology entrepreneurship domain and the theory of the firm are interdependent through the specialized individuals and heterogeneous assets committed to a project for the purpose of creating and retaining value for the firm.

The specialized individuals and heterogeneous assets in the project's stock of resources can be considered reference points in the theory of the firm. The theory of the firm aims to explain why firms exist, what determines their structure, and what drives their different actions and performances.

The proposed definition emphasizes the importance of technology in entrepreneurship in enabling specialized individuals to develop combinations of assets and their attributes in order to create and capture value for the firm. An 'asset' refers to an economic resources that is owned or controlled by the firm and is used to create and capture value for the firm. An asset can be thought of as a bundle of attributes defined by their characteristics, functions, and potential uses. The term 'heterogeneous assets' refers to a set of assets that lack uniformity in composition or character.

The aspect of technology in entrepreneurship management in which the need to pay particular attention are identified. These aspects are:

- (i) The interdependence between scientific and technological change and the selection and development of combinations, assets, and assets attributes;
- (ii) Biases in the existing entrepreneurship literature;
- (iii) Conceptualization of technology in entrepreneurship as an investment in a project, rather than opportunity recognition of venture formation and
- (iv) Links among technological entrepreneurship, the theory of sustainable competitive advantages, and the theory of the firm.

TECHNOLOGY BUSINESS INCUBATION CENTERS, (TBIC's)

Part of the NEEDS programme of the Obasanjo administration included the creation of jobs education facilities with special emphasis on Technology Business Incubation Centers (TBIC's). The goal is to promote and engage the semi-formal productive sectors of the economy:

According to information at the beginning of 2000 about 70% of the population of Nigeria are engaged either in the informal sector, the Agricultural sector, or small and medium enterprises (SME's). Such an important sector of the economy has access only to the most rudimentary technology, information and processes. As part of the transformation agenda, the government wanted to diversify the economic base and mainstream the informal sector while strengthening its linkages to the rest of real sector by increasing the local value addition and share of manufactured goods in total exports.

Under NEEDs I and II, the institutional and policy framework for this was being established through Small and Medium Enterprise Development Agency of Nigeria, (SMEDAN), Technology Business Incubation Centers, (TBIC's) and small and Medium Industries Equity Investment Scheme, (SMIEIS).

In summary, the TBIC's aim to provide conducive environments for nurturing start – ups and survival of value added and technology –related manufacturing.

2. Explain the Types, And Sources of Materials Used In both Manufacturing and Service Industries;

3. Explain the Types and Sources of Plants and Machinery Used In Small Scale Industries;

LOCALLY AVAILABLE RAW MATERIAL BY POSSIBLE USES AND PROCESSING EQUIPMENT REQUIRED, AND POSSIBLE MARKETS

Table 1 shows the uses, processing equipment for major agricultural raw materials

S/No.	Raw Materials	Product/possible use	Processing Equipment required	Possible Market for products
1.	Maize	- corn flour, corn flakes, animal feed, baby food, starch and derivatives, pharmaceuticals, confectionery - Alcohol -adhesives, industrial chemicals - corn oil - particle board manufacturing	- Milling plant with deduster, grinder, sifter - distilling equipment, fermentation tanks - chemical extractors, concentrators oil extraction plant chaff compressor and compactor	- local and foreign food and drug manufacturers - local and foreign distillers - paper and allied products manufacturers - furniture makers
2.	Rice	- breakfast cereals, animal feeds, baby foods, confectionery, flour mills -malting and brewing - parboiled rice - particle board manufacturing	- Milling plant with deduster, grinder, sifter - Malt production plant, fermentation tanks - boilers, washers, driers - Chaff compressor and compactor	- food and drug manufacturers -local and foreign distillers -food packaging and retailing companies - furniture makers
3.	Cow pea	- livestock feeds - Thickener in baby foods	- bean flour mills, dedusters, sifters, etc.	- livestock farmers, private individuals

		-domestic consumption as food		- local and foreign baby food and other manufacturers - individuals and households
4	Soya bean	- composite flour - baby food, cereals, livestock feeds - confectionery - protein concentrate - edible oil	-deduster, dryer/steamer, milling machine, packaging - crusher/oil extractor and refining plant	- local and foreign baby food and other food manufacturers, - animal feed mill -domestic consumers, food and drug manufacturers
5	Groundnut	- edible oil, margarine - peanut butter - cosmetics- soap, perfumes and creams - animal feed - baby food, cereals	- steamer, milling machine, crusher/oil Extractor, mixer/blender - washer, driers, grinders, mixers - deduster, animal feed mill	- pharmaceutical companies, vegetable oil manufacturers - local and foreign baby food and other food manufacturers -pharmaceutical companies - farmers - Food processing plants.
6	Cassava	- starch (textile finishing) - livestock feed - alcohol - adhesives - garri - confectionery	- cassava mill (washing, weighing scales, drier, pelleting machine, peeler, packaging machine), mixers, packaging machines	- agro-allied industry -domestic consumption -local garri manufacturers -Chemical manufacturers.
7	Cocoa	- cocoa butter - wine and beverages - cocoa powder/ash - confectionery - livestock feeds - suppository - detergents	- cocoa mill, grinder, steamer, dryer - distilling units (grinder, steamer, dryer) - cocoa butter manufacturing plant	- cosmetics manufacturers - food and drug manufacturers - bakeries

8	Kolanut	- beverages - stimulants - wines - dyes - soft drink - concentrates	Distilling units (grinder, steamer, dryer)	- export market for products - local beverage manufacturers - domestic consumers
9.	Coconut	- edible oil - cosmetics, soap - furniture and fibre units - confectionery - animal feeds - vinegar - decorations - charcoal	- oil extraction units - crushers, - blender, - furniture making equipment - charcoal chamber	- export market for products - local pharmaceutical and confectionery industries - domestic consumption
10.	Oil palm (Fruit and Nut)	- edible oil - margarine - substitutes for cocoa butter - confectionery - coffee whitener - palm wine - fertilizers - soap/detergent - cosmetics - yeast	- oil mill - hammer mill - crushers - oil extractors, - boilers - Pulp compactors -drums, moulds, -mixer	Local and international pharmaceutical, cosmetics and confectionery manufacturing industries, furniture makers, distillers, domestic consumers

Conclusion

Over the last four decades, technology entrepreneurship has become an increasingly important global phenomenon. It is perceived as necessary for growth, differentiation, and competitive advantage at the firm, regional, and national levels. Technology entrepreneurship appeals mainly to leaders and top management teams of small and large firms who use technology to create, deliver, and capture value for their stakeholders. Technology in entrepreneurship also appeals to personnel of regional economic development agencies that attract investments in productive technologies and talent to a particular geography. The primary function of technology in entrepreneurship is to assemble a combination of specialized individuals and heterogeneous assets in order to create and capture value for the firm through collaborative exploration and experimentation. The combination, of some of the assets, or the assets 'attributes may be unique. The initial combination may change over time. In this article, the literature on technology entrepreneurship was classified into eight themes. The literature search revealed that most of the articles on technology entrepreneurship appeared in journal not considered to be the technology innovation/ entrepreneurship domain. The article offered a definition for technology

entrepreneurship. A better definition of technology entrepreneurship can help improve its performance, increase its relevance, and establish it as a legitimate domain of inquiry in its own right. This definition needs to identify and incorporate the various distinctive aspect of technology in entrepreneurship and its link to the existing domains of economics, entrepreneurship, and management. The definition, including the corresponding features and links, requires particular attention from scholars and practitioners.

The aspects of technology in entrepreneurship to which we need to pay particular attention are identified. These aspects are:

1. The interdependence between scientific and technological change and selection and development of new combinations, assets, and asset attributes.
2. Biases in the existing entrepreneurship literature.
3. Conceptualization of technology in entrepreneurship as an investment in a project, rather than opportunity recognition or venture formation.
4. Links among technology entrepreneurship, the theory of sustainable competitive advantage, and the theory of the firm.

References

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Ways in which Entrepreneurship exploit a merging technology opportunity (Liu et al., 2005)

Joint efforts to interpret ambiguous data and joint understanding to sustain Technology efforts (Jelinek, 1996)

How to generate inputs that result in the transformation of an emerging Technology (Garud and Karnoe, 2003)

Considering Technology Entrepreneurship as an investment (Rothberg, 1985).