COURSE GUIDE

ENT 415
TECHNOLOGY ENTREPRENUERSHIP AND INTELLECTUAL PROPERTY RIGHTS

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INTRODUCTION

ENT 415: TECHNOLOGICAL ENTREPRENURSHIP is a one semester course work. It is available to students on B.Sc. Entrepreneurship in the School of Management Sciences at the National Open University of Nigeria.

The course is made up of 17 units covering essential topics in Technological Entrepreneurship. It also treated in detail, the concept of technology entrepreneurship, intellectual property, knowledge management and technology entrepreneurship development in Nigeria.

This course guide tells you what the course is all about, the relevant textbooks you should consult, and how to work through your course materials to get the best out of it.

COURSE CONTENTS

The aim of this course is to introduce you to the concept of technological entrepreneurship. The course entails the core study of technological entrepreneurship which is based on different concepts such as: knowledge management, intellectual property, entrepreneurship incubation center.

COURSE AIMS

The course aims to groom students in the concept of technological entrepreneurship which is geared towards enabling the student of entrepreneurship come up with innovative ideas in the area of technological entrepreneurship. Sooner or later, the students, after their studies, will be able to model their businesses along with this concept. A good foundational knowledge of the concept of technological entrepreneurship in Nigeria and notable backers towards entrepreneurship development in Nigeria will give students the opportunity to understand the importance of this concept of technological entrepreneurship in the Nigeria context.

COURSE OBJECTIVES

In order to achieve the full aims of the course, the study is divided into logical units and each unit states, at the beginning, the objective which is set to be achieved. You are therefore advised to read through the specific objectives before reading through the unit. However, the following represent some of the broad objectives of the course. That is to say, after studying the course as a whole, you should be able to explain:

* The concept of entrepreneurship.

* The concept of technological entrepreneurship.

* Development of technology incubation centers especially in the Nigerian context.

* SWOT analysis and entrepreneurship

* Features of technological entrepreneurship

* The concept of Knowledge Management

* The concept of intellectual property

*Copyright, Patency, Trademark and issues of intellectual property in Nigeria.

WORKING THROUGH THIS COURSE

It is very crucial that you read through the units carefully by consulting the suggested texts and other relevant materials to broaden your understanding. The units may contain tutor-marked assignments to help you. Only when you have gone through all the study materials provided by the National Open University of Nigeria (NOUN) can you satisfy yourself that indeed you have completed the course. Note that at certain points in the course you are expected to submit assignments for assessment, especially the Tutor-Marked Assignment (TMAs). At the end of the course, there will be a final examination to test your general understanding of the course.

COURSE MATERIALS

Major components and study units in the study materials are:

Course Title: ENT 415: Technological Entrepreneurship

Study Units We have four modules and seventeen study units under this course. These are: 7

CONTENT

Module 1

Unit 1: Introduction to Entrepreneur and Entrepreneurship.

Unit 2: Technological Entrepreneurship: Conceptual Meaning.

Unit 3: Dimensions of Technological Entrepreneurship.

Unit 4: Features Technological Entrepreneurship.

Unit 5: Role of Technological Entrepreneurship in Social and Economic Development.

Module 2

Unit 1: Theories of Entrepreneurship.

Module 3

Unit 1: SWOT: A brief Conceptual Analysis.

Unit 2: Aims of SWOT analysis.

Unit 3: When to use SWOT.

Unit 4: How to conduct SWOT analysis.

Unit 5: Demerits of SWOT analysis.

Module 4

Unit 1: Origin of entrepreneurship in Nigeria.

Unit 2: Technological entrepreneurship development and small scale business in Nigeria.

Unit 3: Framework for technological entrepreneurship development in Nigeria.

Unit 4: Policy requirements for technological entrepreneurship development in Nigeria.

Unit 5: Technology Business Incubators.

Unit 6: Brief history of technology incubators in Nigeria.

Module 5

Unit 1: Knowledge Management: Introduction.

Unit 2: Introduction to Intellectual Capital.

TEXTBOOKS AND REFERENCES

You should use the prepared text for the course made available to you by NOUN. However, in your own interest, do not limit yourself to this study text. Make effort to read recommended texts to broaden your horizon on the course.

ASSIGNMENT FILE

The assignment file will be made available to you (where applicable). There, you will find details of all the work you must submit to your tutor for marking. The marks you obtain from these assignments will count towards the final mark you will obtain to hit the required pass-mark for the course.

ASSESSMENT

Your performance on this course will be determined through two major approaches. The first is through your total score in the Tutor-Marked Assignments, and the second is through the final examination that will be conducted at the end of the course. Thus, your assessment in the course is made up of two components: Tutor-market Assignment 30% Final Examination 70%

The self-assessment tests which may be provided under some units do not form part of your final assessment. They are meant to help you understand the course better. However, it is important

that you complete work on them religiously so that they will help in building you strongly and serving you as mock-examination.

TUTOR-MARKED ASSIGNMENT

At the end of each unit, there is a Tutor-Market Assignment (TMA), which you are encouraged to do and submit accordingly. The study centre manager/ tutorial facilitator will guide you on the number of TMAs to be submitted for grading.

Each unit of this course has a TMA attached to it. You can only do this assignment after covering the materials and exercise in each unit. Normally, the TMAs are kept in a separate file. Currently, they are being administered on-line. When you answer the questions on-line, the system will automatically grade you. Always pay careful attention to the feedback and comments made by your tutor and use them to improve your subsequent assignments.

Do each assignment using materials from your study texts and other sources. Try to demonstrate evidence of proper understanding, and reading widely will help you to do this easily. The assignments are in most cases easy questions. If you have read the study texts provided by NOUN, you will be able to answer them. Cite examples from your own experience (where relevant) while answering the questions. You will impress your tutor and score higher marks if you are able to do this appropriately.

FINAL EXAMINATION AND GRADING

At the end of the course, you are expected to sit for a final examination. The final examination grade is 70% while the remaining 30% is taken from your scores in the TMAs. Naturally, the final examination questions will be taken from the materials you have already read and digested in the various study units. So, you need to do a proper revision and preparation to pass your final examination very well.

HOW TO GET THE BEST OUT OF THIS COURSE

The distance learning system of education is quite different from the traditional or conventional university system. Here, the prepared study texts replace the lecturers, thus providing you with a unique advantage. For instance, you can read and work through the specially designed study materials at your own pace and at a time and place you find suitable to you.

You should understand from the beginning that the contents of the course are to be worked on carefully and thoroughly understood. Step by step approach is recommended. You can read over a unit quickly to see the general run of the contents and then return to it the second time more carefully.

FACILTATORS/TUTORS AND TUTORIALS

Full information about learning support services or tutorial contact hours will be communicated to you in due course. You will also be notified of the dates, time and location of these tutorials, together with the name of your tutors. Your tutor will mark and comment on your assignments. Pay attention to the comments and corrections given by your tutor and implement the directives as you make progress.

USEFUL ADVICE

You should endeavor to attend tutorial classes since this is the only opportunity at your disposal to come face to face with your tutor/lecturer and to ask questions on any grey area you may have in your study texts. Before attending tutorial classes, you are advised to thoroughly go through the study texts and then prepare a list of questions you need to ask the tutor. This will afford you opportunity to actively participate in the class discussions.

SUMMARY

Technological entrepreneurship is an aspect of inquiry that focuses on the concept of technological entrepreneurship, features of entrepreneurship and historical development of technological incubation centers as panacea for sustainable entrepreneurial development. The study also examined intangible assets of technological entrepreneurship such as knowledge management, intellectual capital, intellectual property etc. The role and development of technological entrepreneurship in Nigeria was also discussed and notable contributors in Nigeria were also discussed.

MODULE: 1

INTRODUCTION TO TECHNOLOGICAL ENTREPRENEURSHIP

MODULE UNIT: 4 UNITS

MODULE INTRODUCTION

This module serves as introduction to this course: Technology Entrepreneurship. It begins by exploring various conceptual meaning of technology entrepreneurship as well as a brief understanding of the two major key words that serve as the backbone of this course: Technology and Entrepreneurship. Afterwards, an operational definition of term will be giving to the concept from the writer's perspective as a guiding platform which will serve as the bedrock in which every other module in this course will hinge on. The unit will also mention and discuss various features of technological entrepreneurship. How technological entrepreneurship can contribute to social and economic development as well as the dimensions of technology entrepreneurship.

MODULE 1 OBJECTIVE:

At the end of this unit, students should be able to:

1. Define the words "entrepreneurship" and "technology".
2. Explain the concept of technology entrepreneurship as giving by various scholars.
3. List and explain the dimensions of technological entrepreneurship.
4. Explain how technological entrepreneurship can contribute to economic and social development.
5. Operationally, define technology entrepreneurship using their own words.

MODULE 1 LESSON CONTENT:

Unit 1: Entrepreneur, Entrepreneurship and Technology: A Concise Definition.

The concept of entrepreneurship and technology is not a new field among scholars. Various definitions from different perspective have been applied to this concept. It is however imperative that the student of technology entrepreneurship have a concise understanding of the two key words that make up this course first, before further discussion on technology entrepreneurship is made.

McClelland (1967; 1971) defined entrepreneurship from a psychological perspective. He asserted that an individual's need is a strong motivational factor that could influence him or her

to start a small enterprise which could enable him to meet his or her needs. However, Fillion explores the concept of entrepreneurship from an environmental perspective. He is of the opinion that entrepreneurs are seen as a semblance of a period and a place that they are accommodated. But Cantilion (1755) and Say (1803) are of the opinion that entrepreneurship is a risk-taking activity. An aligned definition with that of Cantilion and Say is that of Caree and Thurik (2002). They are of the view that an entrepreneur is an enterprising individual who builds capital through risk and initiative. Akinwumi (2012) defined entrepreneurship as the "act of identifying, initiating, and organizing and bringing a vision to life, be it a new product, service, process, organizational strategy, promotional strategy or a niche market". From the various definitions explored, it can be deduced that an entrepreneur or entrepreneurship is associated with an individual who initiates a business venture to maximize profit. It could also be attributed to mean the establishment of a particular business venture not only to maximize profit but also to fulfil a human need.

Technology as the second key word of this discuss is defined as the ability to carry out productive transformation, and it includes the ability to act and a competence to perform. Furthermore defined, Metcalfe (1995) asserted that technology transforms materials, energy and information from one state to another value-added state. Also Twiss and Goodridge (1989) are of the opinion that technology as a powerful resource in gaining competitive advantage. However, Dopfer (1992) defined technology as an engine of growth and finally, Layton (1974) conceptualizes technology as knowledge, skills and artifacts. He believes that technology has its own framework of concepts, ideas and relationship which will revolve overtime. Having examined conceptual meaning of technology from different scholars, it is perceived as an

instrument that can be applied to any facet of an organization that will bring about expected result on a rapid level.

Unit 2: Technological Entrepreneurship: Conceptual Meaning.

Technology entrepreneurship is an emerging aspect of entrepreneurship that is beginning to arrest the attention of researchers and organizations. Different scholars have attributed different meaning to the concept. Even to a religious extent as some Islamic scholars have attributed certain religious sentiments to the concept. This perhaps signifies how sensitive and important the concept is.

Early conceptual meaning of technology entrepreneurship could be traced to Garud and Karnoe (2003). They defined technology entrepreneurship as a co-production phenomenon that draws from a team of specialized individuals from multiple fields, some or all of whom become embedded in the technology path they try to shape in real time. Shane and Venkataraman (2004) defined technological entrepreneurship as the process by which entrepreneurs gather organizational resources and technical systems. However, Dorf and Byers (2005) are of the view that technological entrepreneurship is a way of business leadership that involves identifying high-potential, technology-intensive commercial opportunities, gathering resources such as talent and capital and managing rapid growth and significant risk using principled decision-making skills. Allahyary and Meigounpoory (2013) focused their definition technology entrepreneurship on the fact that it is an innovative application of technical science and knowledge either by an individual or by a group of persons, who create and manage a business and is ready to undertake financial risk in order to achieve certain goals and perspectives. In an attempt to conceptualize their own definition, Petti and Zhang (2011) categorized technological entrepreneurship intro three capabilities which are: entrepreneurial, managerial and

environmental capabilities. They believe that a combination of this three capabilities will bring about value creation which could be in terms of monetary benefits. But Bailetti (2012) is more organizationally conscious from his own definition of technological entrepreneurship. He asserted that technological entrepreneurship is to invest in a project that gathers and mobilizes expert members with heterogeneous assets, which are related to advancement in scientific and technological knowledge, in order to create and acquire value for an enterprise.

From a religious perspective, Abdullah and Aheene (2011) defined technological entrepreneurship from an Islamic perspective. They defined it as an individual who carries out entrepreneurial activities that are technology oriented within the framework of Islam. Their definition is associated with the fact that the individual-technology-entrepreneur must have possessed certain knowledge and skills required by the entrepreneur to carry out technology based entrepreneurial activities successfully according to the tenets of Islam. Apart from applying religious tenets into their definition of technological entrepreneurship, the emphasis is anchored on the fact that the technology base entrepreneur must possess certain technological skills in order for him to be able to maximize profit in his business. On the home front however, Aderemi, Ilori, Siyanbola, Adegbite and Abereijo (2008) are of the view that technology entrepreneurship is the setting up of new enterprise by individuals or corporations to exploit technological innovation.

Technological entrepreneurship from the writer's perspective should be associated with certain components. These components are: the individual, knowledge acquisition of technological skills be it in the form information and communication technology (ICT) or technical education. In most cases the perception is always centered on information and communication technology

education and the last component is identification of a societal need whereby the application of technology could solve this need-problem. Furthermore, it is imperative for each of this component to be discussed fully as this will serve as the determining factor for the operational definition of this concept within the scope of this study.

The individual: Technological entrepreneurship is based on the individual in the sense that he or she must be intelligent enough to identify what problem he or she wants to solve in a society with the application of technology-based knowledge. He must have something known as the third eye with which he can see what others do not see that is lacking in a society. At this point, high level creativity and ideas is needed to be able to identify this need and solve this problem. The second component is knowledge acquisition on technological skills. In whatever form technological entrepreneurship is perceived to be, it is expedient for the entrepreneur to have mastery of that technical skill. This will surely convey a message of competence on the part of the entrepreneur. Nowadays, whatever form of entrepreneurship any individual wants to embark on, competence is a fundamental factor which cannot be negotiated. The last component is identifying a societal problem which of course is a need that could be solved through the application technology. What is crucial here is that a problem must be identified and a solution must be preferred. This is a formula that many successful entrepreneurs have applied over the years and it has worked for them For this to be achieved however, the intending technological entrepreneur must be creative and intelligent in identifying a problem and must be willing to solve the problem using every technological means. Example of entrepreneurs that have identified societal problems and have solved them using technological skills are: Bill Gates, Steve Job, Mark Zuckerberg, Thomas Edison etc. Having explored the concept of technological

entrepreneurship from different scholars, it can be defined that technological entrepreneurship is an entrepreneur who has identified a societal deficiency and has applied technological skills to solve this societal deficiency which in turn has made him to maximize profit and create jobs for others as well.

Unit 3: Dimensions of Technology Entrepreneurship

The dimensions of technology entrepreneurship have been identified to anchor on four components of technology entrepreneurship as giving by Shane and Venkataraman (2003). These components are: Industry, firm, technology and entrepreneur. The dimensions of technology entrepreneurship as explained by them are: Awareness, search, strategy, core competency, technology paradigm, linkages, learning and leadership. Awareness is referred to as the ability to recognize crucial environmental changes and the need to improve on this changes. Search is the ability to explore for opportunities and threat. While 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 and 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 leadership as the last dimension is the ability of the entrepreneur to lead his firm to achieve competitive advantage and sustain it.

Unit 4: Features of Technological Entrepreneurship

Aderemi et al (2011) identified two major features technological entrepreneurship. These are High potential opportunity and Technology-intensive opportunity. He went further to explain vividly the meaning of these features.

High potential opportunity

This is seen as a high potential opportunity if it is capable of creating new value for its customers. It must have a significant level of technology understanding which is difficult to replicate and can often be protected, that is patented. This will surely have a significant first mover advantage. It creates a barrier to entry and it also has a high level of initial risk which can be translated into high levels of return.

Technology-Intensive Opportunity

Technology entrepreneurship involves a process of problem solving, raising and safe guarding the quality of life, needing technical skills and applications, identifying potential market, improvement in quality of products in order to improve competitiveness of the firm with expectation of saving in process cost. Additionally, sufficient reason for embarking on technological entrepreneurship is expected to commercialize significant innovations that are expected to guarantee suppliers of materials, long-term stability of firms and increase output.

Unit 5: Role of Technological Entrepreneurship in Social and Economic Development

Zahra and Hayton (2007) and Aderemi et al (2011) opined that since technological entrepreneurship centers on the creation of new firms by independent entrepreneurs and corporations to exploit technological discoveries, it is important to highlight five areas in which these concept contributes immeasurably to economic and social and development.

- Technological entrepreneurship is needed to propel technological innovation efforts into the market. Whenever there is a breakthrough in research and development, it is imperative for technological entrepreneurship to commercialize the achievements of technological efforts otherwise, it remains in the laboratory without making any impact.

- It has the potential of improving state of technological capability in a country. This is due to the fact that as technological efforts are being made, learning takes place. This occurs either by doing or observation, thus improving technological capability in the efforst in question.
- Owning to the fact that technological entrepreneurship would necessarily involve the commercialization of a research output, more patents are generated and patents are a well-known indicator and measure of technological development and industrialization in countries all over the world.
- For a technological entrepreneur to be relevant, he must of necessity meet market needs and be a problem solver. In a bid to meet market need, research and development as well as science and technology efforts must be well coordinated.

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MODULE 2

THEORIES OF ENTREPRENEURSHIP

MODULE 2: 3 UNITS

MODULE INTRODUCTION

This module explores various theories from different scholars associated with entrepreneurship. The module gives a critique to theories analyzed in this context.

MODULE LESSON OBJECTIVE:

At the end of this lesson students should be able to:

1. List and explain various theories of entrepreneurship.
2. Assess and critique various theories guiding the practice of entrepreneurship.
3. Explain how theories discussed in this study is associated with technological entrepreneurship.

Unit 1: Theories of entrepreneurship

Innovation and Entrepreneurship theory of Schumpeter (1934)

The major of premise of Schumpeter's theory of entrepreneurship is focused on innovation. He argues that the status of an entrepreneur is only acquired during the process of innovation. He outlined certain factors of innovation that can actually propel the entrepreneur to thrive well in any setting and these are:

- The introduction of a new good;
- The introduction of a new method of production;
- The opening of a new market;
- The conquest of a new source of supply of raw material;
- The creation of a new organization of an industry.

To him, all these factors will be stimulated by three drivers which are: The will for power and independence; The aim to triumph and the happiness of creating. To him money should not be a major factor for production to take place rather the entrepreneur should first and foremost take into cognizance the above listed factors, afterwards he can now seek for capital to implement those factors.

Knowledge and Entrepreneurship Theory by Friedreich von Hayek (1945)

Friedreich von Hayek was an Australian Economist. The major premise of his theory is centered on practical knowledge. According to him, the deficit of knowledge represents the fundamental premise for the existence of entrepreneurship. He stressed that deficit knowledge means existing knowledge, that is knowledge acquired before being an entrepreneur is not enough, rather the

entrepreneur should always strive to acquire more knowledge so as to perform better in his job. He went further to explain that practical knowledge represents an important step in the evolution entrepreneurship's research towards more practical perspectives.

Opportunity and Entrepreneurship Theory by Peter Drucker (1985)

Drucker's theory on entrepreneurship says that the entrepreneur is not necessarily the one to cause change but is definitely the one to exploit the opportunities brought by change. He explained further that "the entrepreneur always searches for change, responds to it and exploits it as an opportunity. He believes that the entrepreneur will always see opportunities rather than obstacles developed by change. For the entrepreneur to succeed, an entrepreneur has to be market oriented and also be market driven. In line with this school of thought, Dees (1998) recognizes the idea of opportunity as being central for the process of entrepreneurship and moreover states that the current situation of a company, therefore including its current resources, does not represent an obstacle for the entrepreneur to pursuit a chance.

Network and Entrepreneurship theory by Ronald Burt's Theory of Entrepreneurship.

Burt's theory of entrepreneurship is premised on network. He asserted that entrepreneurial opportunities can be found in a person's work if this is structured in a certain way. A network represents all the relationships and connections that one has with the others, no matter of their nature and characteristics. The concept of network is central to the term of social capital and suggests that there are two possible interpretations to it. On one hand, a network can be considered important because it is the way which can lead to significant resources and opportunities and on the other hand a network can be considered important because in itself is a resource, able to offer better access, timing or chances. Burt further argued that, one can act as an

entrepreneur only if it is in position of mediating between distinct members of its network. He advised that in order to improve network efficiency, a person or enterprise should try to construct its network mainly with non-redundant contacts. In this way the costs of the network will be minimized. He further asserted that the type of network one constructs also represents an important driver for its behavior. He concluded by saying that a network rich in entrepreneurial opportunity surrounds a player motivated to be entrepreneurial.

A comparison of the four theories discussed so far

The four theories stated above focus on the same concept, which is entrepreneurship, but there are quite a lotof difference among them. Professional difference among them has it that Schumpeter and von Hayek were economists, while Drucker was writer and consultant, Burt was a sociologist. Schumpeter and von Hayek's theory emanated from a period when the practical aspect of entrepreneurship was mainly disregarded, the two scholars have succeeded to approach important aspects from the practice and analysis of entrepreneurship. Schumpeter identified the significance of studying the actual activity of an entrepreneur for future understanding of entrepreneurship, he saw the need to approach the essential aspects of entrepreneurship from a holistic point of view. However, von Hayek apprehended the wrong treatment applied by entrepreneurship researchers to the practical knowledge and argued its fundamental contribution for the success of an entrepreneur or underlined strong connection between new knowledge creation and entrepreneurship.

Drucker and Burt presented their theories in a period when the shifts in entrepreneurship research toward the "how" question was already clear. Therefore, their findings within the field adhere to this trend. The two scholars centered their entrepreneurship theories on the concept of

opportunity. Drucker gave a typology of opportunity sources, a guideline of practice of entrepreneurial management or states that an entrepreneur is not necessarily the change agent. Burt tries to explain with the help of its network theory how persons or enterprises can develop their social capital and how one can discover opportunities and information and become successful entrepreneurs.

Kirzner's "alert" entrepreneur theory (Kirzner, 1997)

The main focus of Kirzner's "alert" entrepreneur theory are the settings required to withstand a balance, and Schumpeter's focus was to elucidate the progress in capitalistic system by using innovator entrepreneur's destructive creation. Kirzner- representing the Neo-Austrian approach to entrepreneurship- focused on responding to question of whether a market economy works and, if it does so, what is the process that leads the economy towards an equilibrium? Kirzner claims that initially the economy is the uncertainty among 'alert' entrepreneurs leading to steadiness. Unlike Neo-classical economists, Kirzner comprehends that markets are not always strong, there is no flawlessly informed representative agent and for change to occur the entrepreneurs need incentives and this incentives comes from the difference among agents in terms of information and knowledge. According to Kirzner, a development in the method of production or a change in partialities leads to change (disequilibrium) in the market where initially there was equilibrium. If there is stability in the market there is nothing for the entrepreneur to do and no exchange and profit opportunities for them since everybody will be able to carry out his initially determined exchange plans. But whenever the change has occurred, some planned activities will not be realized. Kirzner states, there is no room for entrepreneurial discovery and inspiration. The progression of market proceedings is foreordained by the data of market conditions and for the organization to generate profit opportunities for entrepreneur there

is need for an exogenous tremor to the system. Kirzner argues that the economy is in a continual formal imbalance due to shocks constantly hitting the economy. Furthermore, economic agents suffer from "utter illiteracy"- they simply do not know that supplementary information is available. In this world, the alert entrepreneur determines and exploits new business opportunities and eliminates (some of the) "utter ignorance" and thus interchanges the economy towards equilibrium, which is the state where no more information can be discovered. His analysis of entrepreneurship recognizes a disequilibrium that can only be corrected (to equilibrium) by alert entrepreneurs who produce and exchange, but the emphasis is on the exchange chances and progresses that comes mainly from this part. He postulates that entrepreneurial progress does not depend on a “great man" but it does depend on many great men, many players in the business arena. Profits from an entrepreneurial venture may not usually be very large and in some cases before the break-even point is recognized, the returns maybe negative. Since there is a lot of uncertainty in the business environment, incomes is always a hypothetical affair by the entrepreneurs and therefore an entrepreneurship is an act of risk taking.

Biological Theory of Entrepreneurship

Risk has been a central concept in entrepreneurship literature recommended by Adam Smith and J.S. Mill (Schumpeter, 1989). Entrepreneurial activities are regularly assumed to involve risk-taking, especially relative to managerial activities within established corporations. However, research has failed to consistently find risk-taking propensity to be a trait distinguishing entrepreneurs from others (Brockhaus, 1980; Aldrich and Wiedenmeyer, 1993; Gartner, 1989). A more promising recent line of research has suggested that entrepreneurs differ in cognitive style from others and that they may be more likely to make particular cognitive errors (Baron, 1998; Kahneman and Lovallo, 1994; Palich and Bagby, 1995), especially errors of overconfidence

(Busenitz and Barney, 1997, Cooper, Dunkelberg and Woo, 1988; Manimala, 1992). Psychologists have documented moderate and consistent levels of differences between men and women in risk-taking behaviors. An analysis of 150 studies examining such differences found some evidence of a temporal trend toward smaller differences, but still found that men were significantly more likely than women to engage in 14 of 16 types of risky activities. Their results showed that "males took more risks even when it was clear that it was a bad idea to take a risk," and that females "seemed to be disinclined to take risks even in fairly risky situations or when it was a good idea," leading to the speculation that "men and boys would tend to encounter failure or other negative consequences more often than women and girls" and that "women and girls would tend to experience success less often than they should". (Byrnes et al., 1999).

Psychologists‟ view explains why women are risk averse and are skeptical into venturing in unfamiliar territories as regards business operations. Risk taking is one the entrepreneurial competencies that can propel a business to growth and innovation that ultimately may make a business enterprise to be successful. Risk averseness may contribute immensely to business failure and collapse. This might explain why women enterprises fail within five years of their establishment/start up. Powell and Ansic (1997) studied business decision-making and their research suggested that women prefer lower risks than men, especially in financial contexts. Their own experimental study of business students showed that women preferred less financial risk than men across a variety of framing scenarios. These views are consistent with those of Sexton and Bowman-Upton (1990), whose study suggested a lower preference for financial risks among female than among male entrepreneurs. It is also consistent with a perspective that views financial leverage as risky, women are also less likely to apply for a loan and are more likely to use personal assets to finance the enterprise or as collateral (Van Auken, 1999; Sexton and

Bowman-Upton, 1990). This situation is similar to the Kenyan situation where women are more comfortable with the merry-go –round funding and micro-financing as opposed to borrowing from commercial banks as this is perceived to be less risky. Practitioner-oriented entrepreneurship writers have frequently commented that women entrepreneurs perceive or evaluate risk differently than men, suggesting that women may be less likely to voluntarily undertake very high-risk business activities (Scollard, 1989, 1995). It has also been suggested that women may be less willing to undertake activities-such as raising external financing-that put them at risk of losing control of their business to outside stakeholders (Stolze, 1989, 1995). Scollard suggests that small elite groups of women entrepreneurs approach risk-taking in a manner similar to men, but that on average, women entrepreneurs are much less willing to undertake substantial business risks. She suggests that men build businesses of all sizes, but most women build only very small businesses, with a few building large firms.

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MODULE THREE

SWOT ANALYSIS AND ENTREPRENURSHIP

MODULE UNIT: 3 UNITS

MODULE INTRODUCTION

This module is a 3 unit course centered on SWOT analysis and entrepreneurship. It starts by examining the concept of SWOT which is an acronym of strength, weakness, opportunity and threat. The module will also discuss the influence of SWOT on entrepreneurship.

At the end of this lesson students should be able to:

1. List and explain the meaning of SWOT.
2. Explain the aims, when to use SWOT, how to conduct SWOT analysis and demerits and merits of SWOT.

UNIT 1: SWOT: A BRIEF CONCEPTUAL ANALYSIS

Free management ebooks (FME) (2013) defines SWOT as an instrument that a firm can use to evaluate for its products, services and markets when determining on the best way to achieve future development. The 'S' in SWOT stand for strength; 'W' means weakness; 'O' stands for opportunity and 'T' means threat. It could also serve as a tool for identifying and analyzing internal and external factors that can have impact on the viability of a project, product, place or person. According to Kochi (n.d). Strengths and weaknesses are considered internal factors – that can be checked internally. To him, how the market or business is managed controls whether it is a strength or weakness. Likewise, opportunities and threats are considered as external factors – over which the members of the firm have little control. However, it is the job of the manager of the firm to respond appropriately.

Stan and Nedelcu (2015) identified SWOT analysis as a tool by which the necessary information can be analyzed to develop competitive analysis, while the European Community Civil Protection Mechanism (ECCPM) defines SWOT analysis as an instrument to analyze the strengths and weaknesses of a firm, as well as the opportunities and threats by the information an individual have gathered on an external environment. ECCPM identified two categories of people that should make use of SWOT and these are: team members and managers. Ina further explanation of the concept of SWOT, Shinoj (n.d) gave the following assertions to SWOT:

Strengths:

- Features of a business or a team that give it an improvement over others in the industry.
- Optimistic physical and immaterial aspects, core to an organization.

- Favorable phases of a firm or the proficiencies of a firm which centers on human capabilities, procedure competences and financial funds, yields and services, customer friendliness and brand reliability.
- Examples - renowned brand name, Lower costs (raw materials or processes), superior management talent, better marketing skills, distribution skills and committed employees.

Weaknesses:

- Features that place the firm at a drawback comparative to others.
- Diminish the firm from its aptitude to reach the essential aim and impact its growth.
- Weaknesses are the aspects which do not meet the standards we feel they should meet. However, sometimes weaknesses are manageable. They must be minimized and eradicated.
- Examples - limited financial resources, limited distribution, higher costs, out-of-date products / technology, weak market image, poor marketing skills,
- Limited management skills.

Opportunities

- Probabilities to make superior proceeds in the environment - outward attractive factors that represent the reason for an organization to exist and develop.
- Ascend when an organization can take advantage of conditions in its situation to plan and execute strategies that enable it to become more lucrative.

- Firms should be careful and recognize the opportunities and grasp them whenever they arise. Opportunities may arise from market, competition, industry/government and technology.
- Examples - quick market development, varying customer wants, new uses for product discovered, economic boom, sales weakening for a substitute product.

Threats

- Exterior rudiments in the environment that could cause trouble for the business - external factors, outside a firm's control, which could place the organization's mission or operation at risk.
- Rise when circumstances in external environment endanger the consistency and profitability of the organization's business.
- Examples - entry of distant competitors, varying customer needs or firms, accept new strategies, enlarged government regulation, economic downturn.

Unit 2: Aims of SWOT analysis

The following are the key aims of SWOT analysis;

- To support decision makers share and relate ideas.
- To convey a stronger mutual purpose and understanding of features for victory.
- To establish significant aspects allied to accomplishment and letdown in the business world.
- To provide linearity to the decision making procedure allowing compound thoughts to be presented methodically.

Unit 3: When to use SWOT?

SWOT analysis can suggest accommodating viewpoints at any period of an exertion. It may be applied for the following purposes;

- Discover likelihoods for original efforts or keys to problems.
- Make decisions about the best track for your enterprise and recognizing your opportunities for achievement in setting of pressures to success can elucidate instructions and choices.
- Regulate where change is possible. If you are at a point of making a decision, a record of your strengths and weaknesses can disclose significances as well as possibilities.
- Correct and improve plans mid-course. A new opportunity will bring about wider avenues, while a new threat could close a path that once was.
- SWOT also offers a humble ways of interactive and an exceptional way to Organize information you have assembled from lessons or reviews.

Unit 4: How to conduct SWOT Analysis?

SWOT analysis involves three foremost strides which are:

(i) Analyzing internal and external environment.

(ii) Performing SWOT analysis and documentation.

(iii) Preparing action plans.

As shown previously, analyzing internal and external environment centers on developing a strong understanding on the many conclusive features that could impact the achievement or letdown of an industry. These factors could be later branded as strength, weakness, opportunities and threats based on the setting in which they interrelate with the mission on hand as well as the

stakeholders involved. The second step is essentially carrying out the analysis. This includes the following specific activities:

- Creating the objectives for which the SWOT analysis is carried out – This could be extensive/thin, broad/precise.
- Select contributors – Expert opinion may be required for SWOT.
- Apportion research and information gathering jobs – This may be carried out in two stages - explorative and detailed.
- Generating a workshop situation that permits free flow of information among the people involved.
- Listing strengths, weaknesses, opportunities and threats.
- Assessing listed thoughts against objectives – organizing and grouping ideas in relative to the stated objectives.
- Transmit results forward by making sure that SWOT analysis is applied in succeeding planning. It is also helpful to revisit the findings at suitable intervals.

The third key phase involves fixing action plans. The action plans are subsequently categorized into:

(i) Things that must be addressed straightaway.

(ii) Things that can be controlled now

(iii) Things that should be investigated supplementary and

(iv) Things that should be deliberated for the future.

Unit 5: Demerits and Merits of SWOT analysis.

Demerits

SWOT can be highly personal. Two people hardly come up with the same version of a SWOT. It can only be applied as a controller but not as a prescription.

- May cause firms to view conditions as very modest due to which convinced key tactical contacts may be overlooked.
- Classifying features as strengths, weaknesses, opportunities and threats might be very relative as there is great notch of doubt in real world.
- To be effective, SWOT needs to be applied regularly. The stride of variation makes it very cumbersome to forestall developments.
- The data used in the analysis may be based on expectations that successively prove to be unsupported (good and bad).
- It deficient thorough structure, so key elements may get missed.

Merits of SWOT analysis

- SWOT analysis if applied enables an individual or firm to objectively sees where things are going on well or going on badly within the context of the business establishment.
- It serves as an avenue for studies to be carried out in evaluating business and failures success over a period of time.
- It can serve as a tool for further business projection.
- SWOT analysis creates strategic suggestions to achieve long term goals in one's business.
- SWOT can enable an individual or firm seek for new knowledge that can makes one's business perform better over a period of time.

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MODULE 4

TECHNOLOGICAL ENTREPRENEURSHIP IN NIGERIA

MODULE UNITS: 4

MODULE INTRODUCTION

This module discusses the concept of technological entrepreneurship in the Nigerian context. It begins by first of all discussing the origin of entrepreneurship in Nigeria. Afterwards, technological entrepreneurship development in Nigeria is discussed with emphasis on students and women, the role of education in technological entrepreneurship as well as framework for technological entrepreneurship development. The module also explores technological entrepreneurship and small business development in Nigeria likewise technology entrepreneurship development programs in Nigeria. Challenges of adopting technology innovation by SMEs will also be discussed in this module. The module will also explain the concept of technology business incubation especially with emphasis in Nigeria.

MODULE OBJECTIVE:

At the end of this lesson, students should be able to:

1. Discuss the origin of entrepreneurship in Nigeria.
2. Explain technological entrepreneurship development in Nigeria.
3. Vividly explain and critique the framework for technological entrepreneurship in Nigeria.
4. Discuss technological entrepreneurship and small business development in Nigeria.
5. Discuss the concept of technology incubation especially within the context of Nigeria.
6. List and explain various challenges associated with the adoption of technology innovation by SMEs in Nigeria.

MODULE 4: UNIT 1: ORIGIN OF ENTREPRENEURSHIP IN NIGERIA

Entrepreneurship in Nigeria like any other country is influenced by the making or manufacturing in which case the creator most often started with a small capital, in most cases it is his savings. Emerging entrepreneurship kicks off with trade by barter even before the arrival of any usage of money. In the Nigerian setting, an entrepreneur is a self-made man who might be said to have strong will to thrive, he might involve the services of others like; families and other trustworthy relations to aid him in his work or production.

Ebo (2012) cited in Issa, Uzuegbu and Nwosu (2014) asserted that Nigeria is traditionally an agriculture oriented country providing the wholesale of its own food needs and shipping a variety of agricultural goods, notably palm oil, cacao/cocoa, rubber and groundnuts (peanuts). Nigeria as a country then had entrepreneurs who had the entrepreneurial mind-set prevalent at the time. Different business ideas and innovation were generated to advance storage facilities, preservation of perishables such as vegetables, pepper etc. and milking of goats and cows for distribution and sales. For over a century, these business ideas was applied in managing the enterprises, and were maintained. Certain entrepreneurs excelled including the rulers such as Emirs, Obas, Obis and Obongs.

Traditional business methods applied by traditional rulers was the other of the day in ancient Nigeria. Entrepreneurship training started in apprenticeship form. Entrepreneurship practices such as blacksmithing, cloth weaving, pottery and sculpture was what was in vogue then while agriculture was at subsistence level. Within the period, 13^{th}-19^{th} century, the Hausa, Ibo,

Yoruba, Benin all had their own entrepreneurs and were exposed to entrepreneurship opportunities outside their native areas.

Issa, Uzuegbu and Nwosu (2014) asserted that Hausa people from Michika in Adamawa state are the major people who thrive in entrepreneurial practice in Northern Nigeria. They are known for their strong entrepreneurial spirit which is quite similar to that of the Igbos who are naturally endowed for business activities. The Michika people are known for certain entrepreneurial practices such as tanning, dyeing, weaving and metalworking. From the South Eastern region, the Igbos traded on craft goods and agricultural products likewise also, metalwork, weaving and wood carving. Their finished products were traded on as business ventures and enterprise with all tapping of entrepreneurship. The Igbos also specialized in buying and selling goods and have perfected their entrepreneurial expertise in inventory control, management and distribution – which up till today, has remained their prevalent way of entrepreneurship.

The South Westerners who are predominantly Yoruba settlers practiced small-scale, domestic agriculture and are well known as traders and craftspeople Issa, Uzuegbu and Nwosu (2014). Ever since the emergence of the 13th century, Yoruba artists have been producing masterpieces of woodcarving and bronze casting. However, in present day time, many Yoruba entrepreneurs have engaged their activities with import-export, shipping, warehousing, freighting, food processing, financial services, banking, packaging, canning, outsourcing, haulage, logistics, assembling, manufacturing and international entrepreneurship.

Going by the antecedents of entrepreneurship practice in Nigeria, the way and manner forefathers in Nigeria practiced entrepreneurship in Nigeria served as the bedrock of what 21st century entrepreneurs are enjoying today in the country. This is to conclude that there are

tremendous opportunities in entrepreneurship practice in Nigeria, if only the 21st century entrepreneur in Nigeria can persevere and be determined to succeed.

UNIT 2: TECHNOLOGICAL ENTREPRENEUSHIP DEVELOPMENT AND SMALL SCALE BUSINESS IN NIGERIA

Developing and developed economies around the world have come to understand the fact that the importance of small businesses. They are seen to be branded by vitality, amusing innovations, productivity, and their unimportant scope allows for faster decision-making process Akabueze (2002). Small and medium enterprise (SMEs) are fundamental creators of employment and income, frontiers of innovation and growth. Udechukwu (2003) reported that in OECD area, "SMEs employ more than half of the labor force in the private sector. In the European union, they account for over 99% of all enterprises and 91% of these enterprises are micro-firms with less than 10 workers". The emergence and contribution of technological entrepreneurship to national economic growth has been a phenomenal occurrence to the extent many unfolding events in this context has been documented in many economic literature Aribaba, Asaolu and Olaopa (2011) and Egbetokun, Siyanbola, Olamade, Adeniyi and Irefin (2010).

Organizations are basically established as the means for grasping entrepreneurial desires of individual entrepreneurs. Entrepreneurial ventures work on the principle motto of profitability and is based on innovation in products, processes or practices Akande, Olusola and Moruf (2013). The essence of technological entrepreneurship cannot be overemphasized and the realization of this could be said to be the motivation behind government expenditure towards the program Aladekomo (2004); Erik and Pages (2006). It was asserted by Juma and Agwara (2006) and Raghavendra, Bala and Subrahmanya (2006) that a Nation's country's keenness as well as

the economic performance of industry is resolute by technological capability likewise the contribution of emerging countries in producing new skills and inventions is almost negligible.

In the Nigerian context, different literature have pointed out that small scale business development is hindered by access to technical-know-how and technology skill required by the entrepreneurs to develop their enterprises Egbetokun et al (2010); Aribaba (2013). In another phase, Thaddues (2012) Government never loses sight of the tripartite relationship between entrepreneurship, industrialization and economic growth. For instance the Small and medium scale development agency (SMEDAN) organized seminars, workshops at both local and internal levels and encouraged the formation, registration and co-operation of micro, small and medium businesses associations. These associations are: Nigerian Association of Small and Medium Scale Enterprises (NASME), International Council of Small Buisness (ICSB), Abuja Enterprises Agency (AED), Acadia Center for Small Business and Entrepreneurship (ACSBE) through cooperation, linkages and franchising of entrepreneurship activities. Other agencies and schemes through which government has assisted technology innovative entrepreneurship in Nigeria are listed below:

- Youth Empowerment Scheme (YES)
- National Open Apprentice Scheme (NAOS)
- Small and Medium Enterprise Development Agency of Nigeria (SMEDAN)
- National Economic Empowerment and Development Strategy (NEEDS)
- Small and Medium Enterprise Equality Investment Scheme (SMEEIS).

Also between 2010 and 2015, the then Federal government introduced “YOUWIN” program which means “Youth Enterprise with Innovation in Nigeria”. It was an innovative business plan

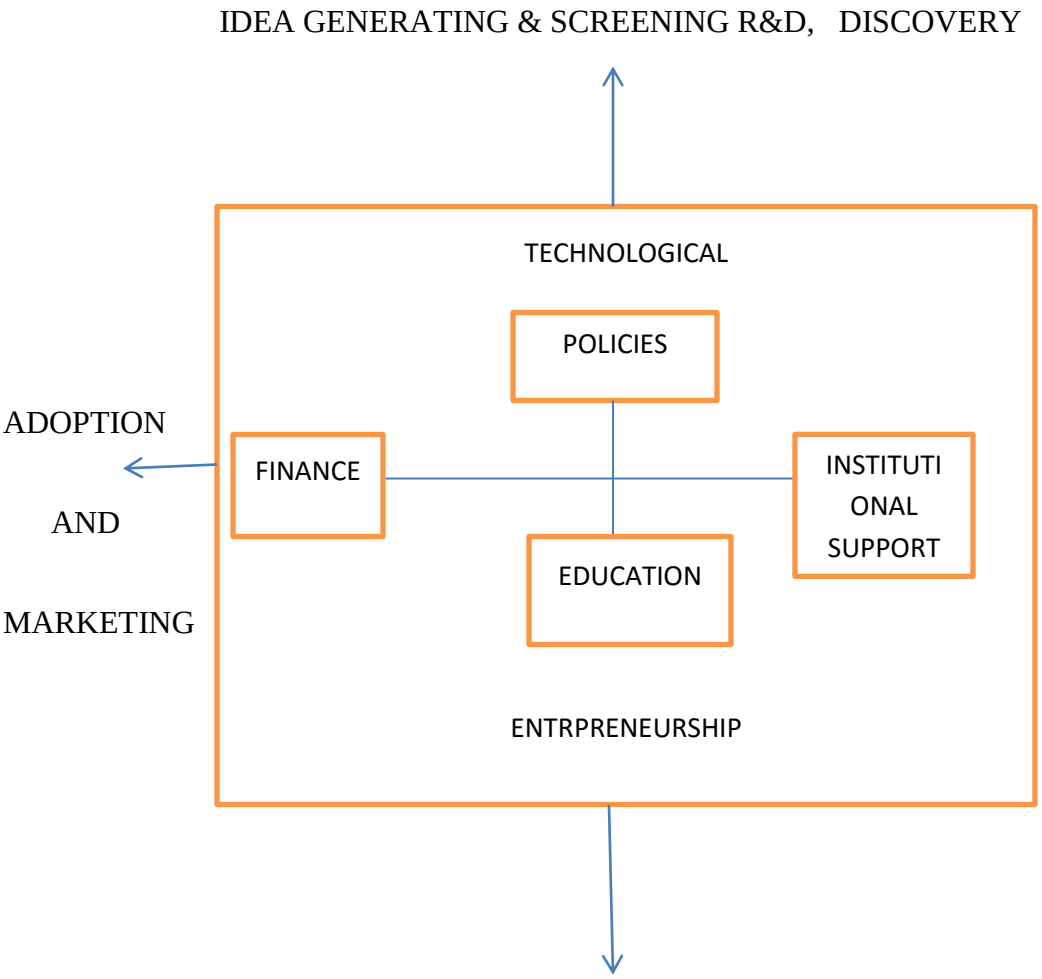
competition targeted at creating 110,000 jobs over a 4 year period to encourage and support aspiring entrepreneurial youth in Nigeria to develop and execute business ideas. According to Isaac (2013) as part of the agenda on fostering industrialization through invention and innovations, the Presidential Standing Committee on innovation and invention gave 18million naira to 29 young Nigerian electrical and mechanical equipment inventors. Bubou and Egai (2010); Thaddeus (2012) identified various entrepreneurship development programs of Nigerian government which have immensely affected SMEs in Nigeria. The key areas in which entrepreneurial development have gained the support of the Federal Government are:

a. Agriculture/agro-allied activities: Foodstuff, restaurant, fast food vending etc.
b. Solid mineral: Quarrying, germ stone cutting/polishing and crushing engineering.
c. Power and transport: Power generation: Haulage business (cargo and passengers)
d. Information and telecom business: Manufacturing and repairs of GSM accessories.
e. Hospitality and tourism business: Hotels, accommodation, resort centers, film and home video production.
f. Oil and gas business: Construction and maintenance of pipelines, drilling, refining/bye-products.
g. Environmental and waste management business: Reuse collection/disposal, recycling and drainage/sewage construction job.
h. Financial and banking services: Banking, insurance and stock trading.
i. Engineering and fabrication work: Machines and tools fabrication.
j. Building and construction: Plan and design services, materials sourcing.
k. GSM business: GSM recharge-cards/credit sales, cybercafé/internet businesses, communication and computer systems.

Goedyuys (2007) asserted that innovation being pursued by an entrepreneur has a lot of contribution to business performance of small businesses. Katila (2002); Katila and Ahuja (2002) are of the view that firms that have the ability to create new technological knowledge have been praised for generating and acquiring internal as well as external sources of new knowledge Rosenkopf and Nerkar (2001).

Unit 3: Framework for Technological Entrepreneurship Development

Entrepreneurship development is perceived to focus on individuals who desire to initiate or expand a business while SMEs development on the other hand focuses on developing the enterprise irrespective of whether the individual in charge can be considered entrepreneurial or not UNDP (1999). However, entrepreneurship development focuses on growth potential and innovation than SME development does. The framework adopted for this study is anchored on the premise that innovation and entrepreneurship cannot be separated in discussions about technological entrepreneurship. This is centered on the fact that the operational definition of technological entrepreneurship is associated with the creation of new ventures to exploit technological innovations and discoveries. Therefore, the innovation process has been introduced into the framework with technological entrepreneurship as the culminating event, and policies as well as other moderating and fiscal factors like instituions, infrastructure, education and finance serving as the enabling environment to bring about the desired visible industrialization and development. Sanni, Illori and Oke (2002) reported that some food companies in Nigeria that followed all the seven phases of the innovation process (idea generation, screening of ideas, R&D, business analysis, prototype development, test marketing and commercialization in an integrative and overlapping manner in the development of new products succeeded in their commercialization efforts in Nigeria.



NOTE: The box that has institutional support inscribed in it has an will lead to feasibility study and development of prototype.

Sanni, Illori and Oke (2002) Framework for technological entrepreneurship development

Fundamentally, the framework above proposes that technological entrepreneurship enables innovation progression by generating the stimulus that drives each stage in the process, and uttering the mode and excellence of worth creation from those steps. In turn, technological entrepreneurship is enabled within the context of favorable strategies, establishments, monetary and institutional support. A discussion of the specific steps of the innovation process through which the technological entrepreneurship makes its impact follows.

Generation and Screening of Ideas

Programs of technological development can be determined by new product concepts and ideas. A business idea is the response of individual(s) to resolving a known problem or meeting supposed needs in the environment (markets, community, nation etc.). Ideas are needed to start a new business and/or improve an old one; to respond to market needs; to respond to changing fashions and requirements; to stay ahead of competition; to ad- dress the challenge of product life cycle; to exploit technology among others. However, ideas alone are not sufficient; they must become opportunities for entrepreneurship to occur. Opportunities are created when an attractive idea provides the possibility of good returns for the investor or individual taking the risk. In other words, a genuine business opportunity for a proposed product refers to a need for the proposed product in sufficient volume at high enough price and low enough cost to en- able the entrepreneur to operate at a profit. A good business idea is not necessarily a good business opportunity until it has passed the profitability and feasibility tests.

4.3.2: Sources of Business Ideas

There are various sources of business ideas and these are discussed below:

1) Observation and being sensitive to one's environment by making use of the five senses.

a. Sight: Seeing not just looking.
b. Hearing: listening to what people are saying.
c. Smell: Smelling and asking questions.
d. Taste: Tasting and asking questions.
e. Touch: Touching and asking questions.

1. The ability to observe the environment is not common. Most people look without seeing. A technological entrepreneur possesses observation skill to a high extent. He sees opportunity in poor delivery of a product, overpriced product, and advances in technology, failure of a product or company, a monopoly, adaptation or imitation and in a rapidly expanding market.

2. Internal sources which include suggestions from peers or family, personal hobbies and interests, creativity, personal skills and experience. It has been noted that Professional engineers due to their education, training, and work experience are well positioned to practice technological entrepreneurship Aderemi et al (2008).

3) External sources which include friends, one's bankers, customers, suppliers, franchises, mass media, published market statistics, exhibition/market surveys, brain- storming, research institutes, trade association, universities, government agencies among others.

The Process of Generating, Screening and Selection of Venture Ideas

Identification and assessment of business opportunity is referred to as the "discovery" in the framework. In existing firms, ideas usually originate from the R & D organization/department, and from specific market needs. These two sources of new technology ideas have in recent years been described as technology push and market pull respectively. Identifying and assessing

business opportunities involves in essence, determining risks and returns reflecting factors such as industry and market, length of the window of opportunity, personal goals and competences of the technological entrepreneur, management team, capital, technology and other resource requirements, competition, environment and finally Feasibility report.

4.3.3: Feasibility Study

Feasibility study is a requirement in the development of a technology-based enterprise. It is a well-researched area having practical denotation. It is usually prepared for business start-ups, expansion, modernization, restructuring and diversification. An author described it as a *sine qua non* for the establishment of any industrial venture and posed that one of the major challenges that investors have in promoting venture ideas is poorly packaged feasibility report because of unreliable information and faulty assumptions on which the projections are premised Adegbite (2005). A feasibility study is an examination of the technical, economic and commercial viability of a proposed project. It is a multidisciplinary assignment that only consultants or technical and experienced specialists with the requisite education and training can undertake. In feasibility study, a thorough analysis and interpretation of all the basic issues relating to the project, its environment and all available alternatives are examined Awe (2006). This step is very important for the development of technological entrepreneurship and should be taken seriously.

Once the opportunity has been discovered, feasibility study has the following roles to play in the development of the technological venture:

1) It helps in the identification and selection of re- sources and in avoiding investment overrun;

2) It helps in making of investment decisions;

3) It guides the entrepreneur in the allocation of re- sources;

4) It provides a work plan for implementation;

5) It helps in keeping the business focused and in the determination of growth pattern;

6) It helps in securing licenses and government approval for the product or venture;

7) It is used for post audit review;

8) It helps in getting collaborators and sponsors for the venture.

Some of the activities undertaken under feasibility study include fact finding, research or research, analysis and interpretation of data among others. At the end of the feasibility study, a report would be generated that would include the following: executive summary, introduction, market and marketing, project engineering, materials, production and plants, location and site, project implementation, financial and economic evaluation and conclusion.

4.3.4: Development of Prototypes

This phase is particularly critical for innovation driven by technology-based entrepreneurship to occur. In most cases, the knowledge required at this stage comes from formal R & D. In this stage, the idea on paper is translated into a physical product or process, and its production feasibility is assessed. During this phase, standards and requirements are met to ensure that the product is sufficiently competitive.

Patenting and Approval

Patenting is a critical but optional1 aspect of technology innovation entrepreneurship development. It is the right granted an inventor by the state (government), which allows the inventor to exclude anyone else from commercially exploiting his invention for a limited period, usually 20 years. This period would allow the inventor (innovator) to have made maximum returns on his in- vestment and idea. There are four basic ways the patentee (the owner of the patent, or the patent owner) may exploit the patent. These are by commercialization through:

1) Start-ups: further development of invention or inno- vation in incubators at science and technology parks, etc.

2) Spin-outs (or spin-offs): These are direct exploitations through the formation of business entities (or technological enterprises) to commercialize the invention or innovation.

3) Assignment/sale of patent: the patentee may sell or assign his rights to the invention to someone else or an organization, who will then become the new owner of the patent.

4) Licensing: a license is an authorization given by a patentee or a government authority to other parties to use the invention. These could be either through voluntary or compulsory license.

5) Voluntary license: this is an authorization given by a patentee to other parties to use the invention based on mutually-agreed terms.

Compulsory license: When all necessary approvals have been obtained, full- scale production and marketing programes are perfected and the product is launched into the market.

Adoption

After launching into the market, the product enters its life cycle, and the external competitive environment becomes a major determinant of its survival.

Unit 4: Policy Requirements for Technological Entrepreneurship Development in Nigeria

Many policies covering different sectors of the Nigerian economy have been put in place to guide the development of entrepreneurship in Nigeria; but without a concise and effective Science & Technology (S & T) policy, industrial and other related policies will only promote commerce Ilori (2006). However, the Nigerian S & T policy, together with most other related ones is defective in either formation or implementation Sanni et al (2002). For instance, the National Economic Empowerment and Development Strategy (NEEDS) emphasized the development of an industrial sector that will be internationally competitive but in the NEEDS

document, there was no mention of the role of S & T. The realization of this deficiency led to the development of NEEDS-II which was still in its infancy when the government of the day handed over to the present one. Today, despite the extent of advocacy and intellectual support in favor of the role of S & T in realizing the administration's 7-point Agenda, Vision 20-2020 and the current transformation agenda, government commitment to S & T is still demonstrably low.

Secondly, it is important to note also, that entrepreneurial interest among Nigerian students is quite high but the expression of this interest in practice is rather low. The main factors found to be responsible for this are poor funding and inadequate preparation through training. A particularly key institutional weaknesses identified was expressed in the inadequacy of government support to young and aspiring entrepreneurs. In fact, until recently when the NUC directed all universities in the country to establish entrepreneurship centers, youth entrepreneurship has been left in the domain of agencies and non-governmental organizations.

A uniform curriculum to promote entrepreneurship education might yield optimal results across different disciplines. But then, the design of these curricula should, therefore, consider the peculiarities of each discipline when issues and resource persons are being selected. As a necessity, entrepreneurial training initiatives should include a standardized monitoring and evaluation structure which ensures strict conformance with quality.

Besides the strictly formal training, entrepreneurial advocacy is also very beneficial. Institutions, of their own volition should seek to organize seminars, workshops, symposia and other similar forums where students could be brought in contact with state-of-the-art knowledge in the practice of entrepreneurship. These forums also hold the benefit of motivating the students by bringing them in contact with excelling nascent entrepreneurs.

In implementing all of the foregoing recommendations, the place of a stable political atmosphere, strong institutions and sustainable funding cannot be over-emphasized. However, if any, policies and programs would ever work in situations of chaos and scarcity of resources. It then rests on the government of the day to work assiduously at creating a crime-free and peaceful environment without which entrepreneurship, which is the vehicle of innovation, cannot succeed.

UNIT 5: TECHNOLOGY BUSINESS INCUBATORS

Technology Business Incubation comprises of the commercialization of science and technology through fresher community recognized preparations which can be thought of as technology venturing. It focuses on alliances as an economic development strategy. Technology venturing is based on creative and innovative ways of linking public sector initiatives and private sector resources within and across regional and national boundaries for promoting economic growth. Technology Business Incubation can trigger communal and community collaborative efforts, while nurturing positive government-academic-business relationships. Technology venturing activities within a community are based on linking four critical factors: (1) talent – people, (2) technology – ideas, (3) capital – resources and (4) know-how – knowledge. Support for each factor includes: Expanding talent pool, accelerating the transfer of technology, increasing availability of capital and Improving availability of managerial, technical and business know-how. The primary drivers of technology business incubation are entrepreneurs – people who make things happen and technologies or ideas that have potential to be commercialized within a reasonable period of time Tornatzky, Batts, McCrea, Lewis, Quittman (1996). However, not only can incubator increase local employment opportunities, it can also diversify the local economic base and enhance the local image as a center for business activity. But in future, Gatewood, Ogden and Hoy (1985) asserted that incubation centers may tend to be organized

‘for profit’, as public source of funding are stretched to their limits. The most effective use of the incubator as a tool for economic development will require careful consideration of the process by which those entrepreneurs choose to participate in the program Spitzer and Ford (1989).

Relationship between business incubators and startups as an entrepreneurial marriage was reported by Allen (1985). In his findings, he reported that to qualify for incubation program one must have: sound technical knowledge , competence in focus area, entrepreneurial traits, good business sense, global thinking, conviction and strong perseverance and strong references.

Business incubators are programs designed to accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed and orchestrated by incubator management and offered both in the incubator and through its network of contacts. Incubators vary in the way they deliver their services, in their organizational structure, and in the types of clients they serve Bulsara, Ghandhi and Porey (n.d). According to them business incubation has been identified as a means of meeting a variety of economic and socioeconomic policy needs, which may include:

• Creating jobs and wealth

• Fostering a community's entrepreneurial climate

• Technology commercialization

• Diversifying local economies

• Building or accelerating growth of local industry clusters

• Business creation and retention

• Encouraging women or minority entrepreneurship

• Identifying potential spin-in or spin-out business opportunities

• Community revitalization

According to www.entrepreneur.com, a firm designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services that could include physical space, capital, coaching, common services, and networking connections. The business incubator seeks to effectively link talent, technology, capital, and know-how in order to leverage entrepreneurial talent and to accelerate the development of new companies. Kuratko and LaFollete (1987) asserted that business incubator is a shared office-space facility that seeks to provide its incubatees with a strategic, value-adding intervention system (i.e. business incubation) of monitoring and business assistance. This system controls and links resources with the objective of facilitating the successful new venture development of the incubatees while simultaneously containing the cost of their potential failure.

Incubators generally differ from research and technology parks in their dedication to start-up and early-stage companies because research and technology parks, tend to be large-scale projects that house everything from corporate, government or university labs to very small companies and may even house an incubator Wikipedia (2009). Business incubation is a dynamic process of business enterprise development Stefanovic, Devedzic and Eric (2008). According to Kim and Ames (2006), the definition of business incubators can differ by researchers' points of view. On the other hand, the most basic concept is the 'incubator' – maintenance of controlled conditions that are useful for the growth and development of start-up companies. Business incubators aim to assist entrepreneurs with enterprise start-ups and development. NBIA (2008) defines a business incubator as an economic development tool designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services by nurturing the development of entrepreneurial companies, helping them survive and grow during the start-up period, when they are most vulnerable. However, Klonowski (2007) asserted that

business incubators or holding companies that provide funding, technical support and networking capabilities, have become central to the development of early stage businesses in Western countries. Typically, this involves offering management assistance, mentoring, access to financing, flexible and low-cost leases, office services Stefanovic et al (2008). Business incubation process adds value by accelerating the start-up of new businesses and helping to maximize their growth potential in a way that is more difficult for alternative SME support structures to achieve Stefanovic et al (2008). It was opined by Folinas et al. (2006) that one of the key determinants for the growth of an entrepreneurial society is the empowerment of private initiatives and the nurture of new enterprises on their way to sustainability and that one of the mechanisms employed to nurture small firms for the past two decades is the business incubation approach. Accordingly, incubators have become increasingly popular in the industrialized world and in developing countries.

Perceivingly it is expected that newly started firms are often very vulnerable with most young high-tech companies encountering and having to cope with a multiplicity of challenges. Therefore, most countries and regions have organisations that provide support to assist these companies overcome their challenges Kirwan, Sijde and Klofsten (2008). According to the UN Millennium Project (2005) technology incubators are a special type of business incubators that focuses on new ventures that employ advanced technologies. However, even though technology incubators share the same general goals as business incubators, they focus more on the commercialization and diffusion of technology by new firms. They nurture hi-tech start-ups and present a technology - oriented variant of business incubators (Stefanovic et al., 2008). However, the first requirement for creating a successful technology-based firm is the existence of a good business idea with a good market potential, to be converted into a new product or service by an

entrepreneur (Folinas et al., 2006). It seeks to effectively link talent, technology and know-how to leverage entrepreneurial talent in order to accelerate development of new companies and speedy commercialization of R&D and innovation. It also helps in value re-orientation by creating an environment for changing the attitudes towards personal initiative, innovation, risk-taking and entrepreneurship.

Science, technology, innovation entrepreneurship has been proven, not only to be the impetus for growth and economic prosperity, but also serves as the foundation for the transformation of the new economy Sankat (2010). Within the last decades, entrepreneurship has ascended to the centre stage in the public policy arena of most countries as reflected in several major policy initiatives around the world Reynolds, Hay, and Camp, (1999). However, moving technology from the scientific discovery stage to a commercially successful product is one of the major drivers of economic development in today's world order Jordan, Kassiciech, Roldan, Jerez, Lotufo and Murphy (2006). This is most vital thing to sustainable development and it can only be effectively done by technopreneurs.

Unit 6: Brief history of technology incubators in Nigeria

The origin of technology-business incubators in Nigeria can be traced to 1993 when the first technology incubation centre (TIC) was commissioned in Agege, Lagos. However, a formal program of technology incubation in the country was only launched with the promulgation of Decree No. 5 of 1995 which also entrusted the supervision and coordination of the program to the Federal Ministry of Science and Technology with effect from July, 1995 (FMST, 2005). At the last count, there are a total of 21 TICs spread across all the parts of Nigeria with the Federal Government intending to establish at least one in each of the 36 states of the federation. The

most recent of the incubators to be established in Nigeria is the Yenagoa Technology Incubation Centre.

Bubou and Okirigwe (2011) gave a vivid account of the development of technology incubation program in Yenagoa, Bayelsa state giving credence to Cooper (2006) and UN Millennium Project (2005) that most technology incubators emerged from central government schemes rather than from local public-private initiatives, the Yenagoa TIC was the brainchild of the Federal Government of Nigeria, through the Federal Ministry of Science and Technology (FMST). The policy thrust of the Technology Incubation Program (TIP) in Nigeria is to pursue the commercialization of technologies and technical innovations using technology incubation as a tool in order to enhance the attainment of technological, industrial, social and economic competitiveness of the country and improve the quality of life of its citizens In Nigeria, the TIP is seen as a veritable institutional mechanism for commercialization of R&D results. It is an integral support program designed to assist budding entrepreneurs in the development of new technology-based firms, both start-ups and fledgling ones FMST (2005) cited in Bubou and Okirigwe (2011). As earlier mentioned, the Yenagoa TIC is one of the 25 technology incubation centres established in the country. Perhaps, it is the most recent, as its formal take-off was only marked in June, 2008 with setting-up of a temporal office manned by some of its management staff in Yenagoa. However, the careful selection of Agudama-Ekpetiama, a suburb of the Yenagoa City that is within proximal distance to all the higher education institutions and research institutes in Bayelsa State as the site of the Yenagoa TIC can be considered as one of the first steps in the establishment of the TIC. Such stakeholder institutions will include - the Niger Delta University, Amassoma, the newly established Federal University, Otuoke, Federal Polytechnic, Ekowe, Linnet Paul Innovation Institute, Etegwe-Yenagoa, Niger Delta City

Polytechnic, Elebele, the National Centre for Technology Management (NACETEM), Amassoma, Raw Materials Research and Development Council (RMRDC), Yenagoa, Bio-Resources Development Centre, Odi, and other institutions and international as well as national networks of incubators, hence the broken boundaries. Since the Yenagoa TIC is still in its infant stages, it was recommended by Bubou and okirigwe (2011) that it will be wise for managers of the TIC to learn from the wealth of experience on technology incubation elsewhere in the world so as to make a good first start. Experience can be gained from the abundance of incubation networks, first within the country by reaching out to other TICs. Another way is to connect to well-known international incubator organizations such as the National Business Incubators Association of the US, Asian Association of Business Incubations (AABI), National Technology Incubator's Network of Australia (NTIN) among others.

Conclusively, Technology Incubation Program in Nigeria has not witnessed tremendous and significant growth over time, perhaps this is due to political developments in the country ranging from lack of transition of government to unstable implementation of policies and some other factors. However, it is imperative for any the government of the day to take this project as a key project of her administration as it will benefit the masses tremendously.

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MODULE 5

INTANGIBLE ASSETS FOR ENTREPRENEURIAL DEVELOPEMNT

MODULE UNITS: 3

MODULE INTRODUCTION

This module discusses various intangible assets that can facilitate entrepreneurial growth within individual and organizational context. The intangible assets are Knowledge Management, Intellectual Capital, the concept of Knowledge Management, Intellectual Property, Patency, Trademark, and Copyright. It begins by first of all discussing the concept of Knowledge Management. It explores what knowledge Management means to organizations, types of knowledge, especially with emphasis on tacit and explicit knowledge as well as theories of Knowledge Management. Afterwards, the concept of intellectual capital will be discussed. Likewise its models and characteristics. Finally, the module will examine the conceptual meaning of intellectual property as well as some of the properties of intellectual property such as copyright, trademark, patency etc.

MODULE OBJECTIVE:

At the end of this lesson, students should be able to:

1. Discuss the concept of Knowledge Management; explain tacit and explicit knowledge as well as theories of knowledge management.
2. Explain the concept of intellectual capital, models and characteristics.
3. Vividly explain intellectual property, types of intellectual property, patency, trademark, copyrights and related rights.

MODULE 5: UNIT 1: KNOWLEDGE MANAGEMENT: INTRODUCTION

Knowledge is seen as a tool for global economic transformation Bell (1978) which can competitive advantage of an organization. Mayo and Lank (1994) asserted that there is a phenomenal shift from "info-war" to "knowledge-warfare". Increasingly, knowledge is seen as outstripping traditional resources such as land, labor and financial capital and is considered the key source of comparative or competitive advantage Grant (1996); Swan and Newell (2000). In some quarters, knowledge is perceived to enhance economic ideas Wiig (1997) or intellectual capital Stewart (1997) and Buren (1999). Plato (1953) first defined the concept of knowledge as "justified true belief". The terms "knowledge" and "information" are often used inter-changeably. Before giving a brief conceptual meaning to knowledge and information, it is imperative for there to be an understanding of the concept of data.

Davenport and Prusak (1998) asserted that data represents observations or facts out of context that are, therefore, not directly meaningful. In a nutshell data is unprocessed information. Information results from placing data within some meaningful content, often in the form of a message. Knowledge, as a "justified true belief", is that which people believe and value on the basis of the meaningful and organized accumulation of information (messages) through experience, communication or inference Dretske (1981); Blacker (1995) and Lave (1988). To obtain information that one needs and to assess the value of information, one has, or needs, to acquire both theoretical and practical knowledge - it implies operation of discipline or action Kakabadse and Kakabadse (1999).Thus realization of knowledge can be conceived of as information put to productive use.

Knowledge management (KM) is very crucial for organizations basically because it will help organization to have competitive advantage and effective work through sharing and re-use of knowledge in an organization. Knowledge management is used to systematically leverage information and expertise to improve organizational responsiveness, innovation, competency and efficiency. There are many reasons why knowledge should be managed properly in an organization. Among the reasons are as follows: information overloads, technology advancement, increased professional specialization, competition, workforce mobility and turnover.

Knowledge Management is about building organizational intelligence by enabling people to improve the way they work in capturing, sharing and using knowledge. It involves using the ideas and experience of employees, customers and suppliers to improve the organizations‟ performance. Building on what works well leads to better practice, strategy and policy www.idea.gov.uk/KM. (n.d). Variety of disciplines have influenced and informed the field of KM thinking and practice - prominent being philosophy, in defining knowledge; cognitive science (in understanding knowledge workers); social science (understanding motivation, people, interactions, culture, environment); management science (optimizing operations and integrating them within the enterprise); information science (building knowledge-related capabilities); knowledge engineering (eliciting and codifying knowledge); artificial intelligence (automating routine and knowledge-intensive work) and economics (determining priorities). In some perspectives, KM is a "conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance" dell and Jackson (1998). Others see KM as a "formalization of, and access to, experience, knowledge and expertise that create new capabilities, enable superior performance, encourage innovation and enhance customer value"

Murray and Myers (1997). Knowledge management was initially defined as the process of applying a systematic approach to the capture, structuring, management, and dissemination of knowledge throughout an organization to work faster, reuse best practices, and reduce costly rework from project to project Nonaka and Takeuchi (1995); Pasternack and Viscio (1998); Pfeffer and Sutton (1999); Ruggles and Holtshouse (1999). There are basically two types of knowledge as identified by many scholars. These are tacit and explicit knowledge.

5.1.1: Explicit Knowledge

Kumar, Vidyapith and Gupta (n.d) vividly asserted that explicit knowledge is knowledge that can be shared with others. it can be documented, categorized, transmitted to others as information, and illustrated to others through demonstrations, explanations and other forms of sharing. Explicit knowledge is a key organizational resource which is increasingly important as the nature of work evolves towards a knowledge focus. Many work roles are now based on processing, producing or disseminating knowledge within or beyond the workplace. Workers who spend most of their time generating, applying or conveying knowledge are called knowledge workers. Explicit knowledge is key resource for such workers and the organization, in that it has the capacity to be distributed, shared and adapted.

5.1.2: Tacit Knowledge

Knowledge residing within people is basically known as tacit knowledge. It can be difficult for people to explain how they apply their expertise to resolve new challenges. Expert knowledge is hard to duplicate, replace or interpret, as it is grounded in a blend of experience, research and induction which may have been refined over many years. A beginning doctor, for example, may take significant time to analyze information about a patient, examine expert resources and perhaps seek advice. A very experienced doctor, on the other hand, will be able to draw

inferences and guidance from a range of those explored by the junior doctor. Although they will largely remain hidden from an observer. Knowledge which draws on the accumulated experience and learning of a person and which is hard to reproduce or share with others is also known as tacit knowledge. Although tacit knowledge is hard to document, categorize and share, organizations depend on it to ensure good-quality choices and judgment Baumund (1999). In a work setting, many staff will have high levels of tacit knowledge which they have developed through their experience, learning and ongoing investigation of sources. The difficulty of translating this knowledge into a tangible product or process raises two issues for organizations: How to identify who holds such knowledge, and how to enable others to access it when they need it has become a concern of knowledge management.

5.1.3: Organizational Knowledge

Organizations seek to use a range of authoritative sources, including knowledge held by individuals and within knowledge systems maintained by the organization. Organizational knowledge draws on different organizational knowledge sources Tsoukas and Valdimirou (2001) including data housed in organizational records and systems, explicit knowledge which is documented and accessible, and tacit knowledge held by employees, customers, shareholders and other organizational stakeholders. Some major corporate knowledge systems include information databases, the company web site, the library and archives. When important decisions need to be made, it is common to seek guidance from these varying authoritative sources, and to build a richer and more informed response by learning and considering the different perspectives each may offer. Canvassing opinion, examining past experience, and analyzing facts and statistics are important processes when developing organizational knowledge. The creation of effective organizational knowledge relies on many things. First, the sources of knowledge that can be

accessed need to be known, available and useful. An organization relies on the knowledge held by individuals. Expert knowledge sources are key strategic forces which should be recognized by others and accessible to them Murray (2002)**.**

5.1.4: Models and theories of Knowledge Management

The Knowledge Creation Model

The knowledge creation model has three elements (i.e. SECI, or Socialisation, Externalisation, Combination and Internalisation), which interact with each other organically and dynamically to create knowledge. In this context, the knowledge assets of an organisation are mobilised and shared whereas the tacit knowledge held by individuals is converted and amplified by the spiral of knowledge through the SECI steps Nonaka and Toyama (2003).

When Nonaka (1991) first introduced the SECI model he identified four distinctive interactions between tacit and explicit knowledge which are: Socialisation, where tacit knowledge is shared through shared experiences, for example face-to-face conversations. Externalisation, where tacit knowledge is converted to explicit knowledge with the help of metaphors and analogies, for example, printed materials and rock paintings. Combination, where explicit knowledge is systemized and refined, for example, by utilizing information and communication technologies and existing databases. Internalisation, where explicit knowledge is transferred to tacit knowledge, for example, learning by doing or translating theory into practice.

The *Ba* Theory

Ba is a concept that unifies physical spaces such as an office and virtual space (e.g. e-mail and mental space, including shared ideals, or good social relationships). Four different notions of ba are defined and correspond with the interaction in the SECI process (Nonaka, Toyama & Konno 2000):

• Originating ba: Defined by individual and face-to-face interactions (individuals feelings, emotions, experiences and mental models are shared.

• Dialoguing ba: Defined by collective and face-to-face interactions (individuals' mental models and skills are shared, converted into common terms and articulated as concepts.

• Systematising ba: defined by collective and virtual interactions (virtual space facilitates the recombination of existing explicit knowledge to form new explicit knowledge.

• Exercising ba: defined by individual and virtual interactions. It is a space where explicit knowledge is converted into tacit knowledge.

Knowledge Economy Theory

This theoretical concept is developing out of concern for knowledge management, and is an important extension to information economics. It essentially regards the 'product life cycle' of knowledge, applying this to either an internal market within an organization or to the external (consulting) marketplace, a commercial market for professional knowledge. From this perspective, managing the knowledge economy within an organization is important because professional knowledge is a valuable commodity. According to knowledge economics theory, there are several important management decisions that are directly informed by the knowledge economics rationale. One decision, for example, is determining

how and when to develop professional knowledge internally and under what circumstances it is more attractive to use external experts. Another decision regards how internal knowledge should be combined with external knowledge, that is, consultants. Finally, there is a decision regarding both how and when internal knowledge should be marketed externally. Consulting firms are particularly interested in the knowledge economy, since their product is developed and marketed here.

Knowledge economy theory describes the need for 'professional support' in organizations. The basic functions of professional support include communication with the environment, reduction of complexity and risk, coordination of the routine tasks issuing from reduced complexity, and standardization, adaptation, and improvement of such routines. Professional or commercial knowledge is necessarily characterized by heuristics based on four elements. These elements are universal, scientific knowledge, routinized skill based on deep practical experience, judgment for optimizing the further use of experts, and capacity for decomposing a unique, complex task into a set of routine, simple tasks (Tordoir, 1995).

Knowledge economy theory is concerned with the production and distribution of knowledge as a commodity for consumption within the organization's value chain. It is also concerned with knowledge as a direct product of the value chain to be marketed outside the organization. For example, one mechanism for managing the knowledge economy involves implementing a generic knowledge management life cycle.

5.1.5 Factors influencing Knowledge Management in Entrepreneurship

Csaszar, Nussbaum and Sepulveda (2005) opined that a decision support system with the purpose to support venture capitalists in their decision-making process with a methodology which integrates strategic and cognitive criteria. The scholars highlight that predictive frameworks are very important for the development of entrepreneurship. De Clerq and Arenius (2006) carried out a survey in Belgium and Finland to examine the effects of individual's education, skills and contacts with the existing entrepreneurial community on the ability to launch an entrepreneur. The latter are critical success factors with a strong impact on the individual's decision process to become an entrepreneur. The results show the likelihood to engage in entrepreneurship activity is positively correlated to the individual's current knowledge

base and the individual's exposure to external knowledge. Therefore, their findings demonstrate the crucial role of knowledge management in explaining nascent entrepreneurship. More precisely, the researchers opined that individual's differential possession of knowledge as well as their differential exposure to external knowledge has an impact on the decision to pursue an entrepreneurial career. Acs, Braunerhjelm, Audretsch and Carlsson (2008) reiterated that the theory of economic growth has its roots in knowledge spillover theory of entrepreneurship, as it allows entrepreneurs to catch business opportunities. The scholars support the thesis that startups base their entrepreneurial activities on knowledge application in order to achieve incremental innovation and product improvements. According to numerical experiments, they prove that the entrepreneurial activities are more efficient and effective in knowledge-based startups, because the continuous knowledge creation processes allows startups to catch new technological opportunities. Finally, the researchers analyzed how an inappropriate use of intellectual property protection in startups could represent a potential barrier hindering knowledge sharing processes, and therefore innovations and scalable growth. Burger-Helmchen (2008) based his studies on single longitudinal case study analysis of a startup operating in the high-tech industry, investigating how different forms of entrepreneurship allows a knowledge-based startup to create an innovative dynamics leveraging on technological innovation. The results highlight that that knowledge sharing processes among startup's members affect positively entrepreneurial activities during the launching and expansion phases. Lu and Sexton (2009) discuss about establishment and growth of a high-tech startup, studying the concrete case of a startup funded on construction knowledge exchange. The results show how the five principal components of a startup are influenced by knowledge: (1) technical know-how, brought as knowledge from the founders; (2) product idea; (3) personal contacts, in which the networks are

both sources of knowledge and sources of legitimacy for the firm; (4) physical resources; and (5) customer orders. Bengoa (2011) focuses the attention on the importance of relationships and trust as facilitators of knowledge sharing in startups. An open and trustful attitude allows startups to support knowledge sharing processes among people of different cultures. On the contrary topic of trust, knowledge protection attitude represents a barrier hindering business cooperation. With these premises in mind, the author shows how trust must be taking care, and ignoring this care or abusing from it represents a high risk of both business relationship and profitability. This trust will be the basis to solve problems or to overcome difficulties in adverse times. Therefore, in order to develop trust, companies must be committed to provide the ground in terms of having opportunities for people to meet and interact. Presutti, Boari, Majocchi (2011) proposed a decision support system to evaluate the impact of geographical proximity on the processes of knowledge acquisition and exploitation of startups operating in high-tech industries. The authors evaluate in their research the role of both the social and cognitive dimensions of geographical proximity. The findings highlight how startups belonging to an industrial cluster acquire knowledge from their customers and this aspect shows the importance of geographical proximity between business partners.

Mathew, Rodrigues and Vittaleswar (2012) surveyed the effects of post globalization in the IT sector related to the “people” dimension of knowledge management initiatives in the information technology industry. Varying dynamically the human dimension of knowledge management, the scholars studied their influence on knowledge management system performance in conjunction with the other success factors. The results of the simulations underline how the support of the top management represents a critical success factor for the adoption of knowledge management strategies. Gibbs, Rozaidi and Eisenberg (2013) explore the ways through which knowledge

sharing processes could lead to covert behavior and dialectical tensions for distributed workers that must be communicatively managed. The scholars asserted that engineers operating in a high-tech startup face tensions in their work due to technological factors that allow for both overt and covert behavior. Specifically, they identify three dialectal tensions affecting knowledge sharing processes across different geographical locations: (1) visibility and invisibility (2) engagement and disengagement (3) sharing as against control. These findings highlight the productive role of tensions in enabling entrepreneurs to achieve multiple aims. Going by the various findings as regards the factors influencing knowledge management in entrepreneurship, these factors may be classified into seven main categories: (1) human and cultural factors individual's education, skills and current knowledge base (2) geographical factors (geographical proximity between business partners) (3) managerial and organizational factors (organizational tensions, support of top managers); (4) relational factors (trust, sharing processes among members, individual's exposure to external knowledge); (5) startup specific factors (contacts with the existing entrepreneurial community); (6) strategic factors (predictive frameworks); and (7) technical and technological factors (technical and technological know-how of founders). Going by the above discussed factors, it is observed that other categories of factors that affect the adoption of knowledge management in entrepreneurship, such as environmental factors, in terms of product technology transfer effectiveness and/or uncertainty, and socio-political factors, in terms of socialization, partner's power, opportunistic behavior, institutional orientation served as gap in literature that could be covered by other researchers.

5.1.6: Knowledge Management Systems adopted by Entrepreneurs

The first researchers who studied the introduction of knowledge management in entrepreneurship were Yazdi, Bahar, Koggersbol and Jorgensen (1995). The scholars presented a knowledge-based method to investigate how the complexity and the non-linear behavior of a startup necessitates the continuous application of entrepreneurs' knowledge and experience. Using the fuzzy-logic the researchers developed a decision support system (DSS) to identify the tracking control tasks. The results show that entrepreneurship adopting the proposed DSS could reduce more than 25% in loss of time and energy. Antlová (2008) investigated how customer relationship management systems support startups in knowledge sharing process with customers. He reported that through the alignment of knowledge management strategies, long term business goals and efficient using of information and communication technology, entrepreneurs could be successful. Hu and He (2008) proposed a project knowledge management system to support the processes of knowledge capturing, knowledge sharing and knowledge reusing for entrepreneurs in managing the complexity of multiple projects. According to them, a project knowledge management system is based on five main functions: (1) capture; (2) digitization; (3) validation; (4) share; and (5) reuse. The proposed web-based system allows project teams of startups to manage knowledge reuse in multiple project environment. Midler and Silberzahn (2008) developed a project-learning-based system to manage knowledge in entrepreneurship. Specifically, this system allows startups to integrate three different bodies of knowledge: project management, organizational learning and entrepreneurship. Steinfield, Scupola, Lopez-Nicolas (2009) conductd a survey on a sample of 58 Danish and Swedish startups belonging to the Medicon Valley biotech region to explore the use of specific ICTs supporting knowledge management, i.e., collaborative tools to connect with off-premise researchers, intranets to

enhance employee access to information and education, online databases for recruitment. Trögl and Maier (2011) surveyed how the adoption of enterprise knowledge infrastructure (EKI) supports startups in the processes of knowledge creation and sharing using active documents. The researchers reported that these systems allow startups to handle semi- or unstructured data, whereas data warehouses allow handling structured data. Therefore, EKIs are often central server based solutions and give the possibility to store metadata linked to the corresponding decontextualized information. In addition, EKIs integrate additional functionalities (e.g., communication functionalities), which will support startup's member in their KM strategies. Liu, Wang and Mei (2012) conducted a survey on a sample of 91 Chinese entrepreneurs to investigate the impact of startup's social network on knowledge transfer process. The results highlight that a high density and centrality of start-up's social network improve the process of knowledge transfer from the social network to start-up firm. Yan and Assimakopoulos (2013) explored the role of social network and community of practice (CoP) as a knowledge sharing tool and knowledge sharing practice based on interpersonal interaction among the engineers operating in a digital Chinese startup. The main findings of the paper highlighted that the majority of problems affecting startups are associated with specific knowledge management practices and project management techniques embedded in the system design process. In fact, each part of a complex system may have different kind of relationships with other parts that are not formalized but easy to understand within project teams. Zheng and Mai (2013) analyze the use of founding teams' transactive memory systems (TMS) to influence the way through which startup's members acquire, store and share knowledge. The scholars conducted a survey data involving 137 Chinese startups to show that in emerging countries where market supporting institutions are deficient, founding teams with strong TMSs are less inclined to acquire external knowledge but

are more prone to improvise in response to surprises than founding teams with weak TMSs. Lisanti, Luhukai and Mariani (2014) investigated how the implementation of a knowledge management system in entrepreneurship and small and medium enterprises allows entrepreneurs to grow their business. The researchers highlighted that selecting the right implementation approach for a KMS (e.g., involving enterprises association, vendors/suppliers and professional to develop the content and encourage startups and small and medium enterprises to participate) has a pivotal role for the success of KM strategies. In order to develop the KMS, they designed a knowledge management system model consisting on KMS cycle, class diagram, database, use case diagram and user interface prototyping.

Alvarez, Cilluruello and Zamanillo (2015) basing on 22 Basque startups grouped into industrial clusters, investigate the relation between formality in knowledge management practices and the size of the organization. The main findings of his study highlighted that informal knowledge management practices in startups are not formalized and standardized, but they are performed by the collaborative work between startup's members. In addition, the size of the startup impacts on the level of formality in knowledge management process and this aspect supports startup's managers to understand where the organizational knowledge is found within organizations and, consequently, to not neglect the importance of personal knowledge. El Said (2015) contributes to knowledge management system research by extending task technology fit (TTF), a model which is widely employed to study knowledge management systems, with the intention to share knowledge construct, in investigating the determinants of knowledge management system impact. Among the key factors, intention to share knowledge is found to be especially important as it positively and significantly affects perceived TTF, utilization and knowledge management system impact. The researcher finds that the enterprise portal created in this way should be able

to accommodate some technological gap issue in order to easily use the system and contribute to share information in the forum, eventually accessing the Internet with mobile phones. Menaouer, Khalissa, Abdelbaki and Abdelhamid (2015) presented an innovative approach to support startup's innovation guided by critical knowledge mapping practices. This approach is based on the method for analyzing and structuring knowledge (MASK), and on the exploitation of capitalized knowledge for innovating the production processes applying theory of inventive problem solving method. The main findings of this contribution show the possibility of generating paths of innovation and/or innovative products from the trades knowledge of startup's actors formalized and capitalized according to the formalism of the MASK method.

In summary, the empirical findings that focus on this area analyzed specific knowledge management practices such as class diagram, use case diagram, user interface prototyping, critical knowledge mapping practices, method for analyzing and structuring knowledge, theory of inventive problem solving, community of practice, project management techniques, system design process, project teams, and collaborative teams) and knowledge management tools i.e., customer relationship management system, forum, enterprise portal, mobile app, project knowledge management system, database, social network, collaborative technologies, intranet, learning management system, enterprise knowledge infrastructure, data warehouse, decision support system, and transactive memory system) influencing the process of knowledge management adoption in startups. However, they do not offer an exhaustive framework for the set of KMSs i.e., both tools and practices that may support methods and techniques of KM in startups in order to support the different phases of knowledge management process - creation, acquisition, storage, transfer, sharing, application).

Module 5: Unit 2:Introduction to Intellectual Capital

According to Klein and Prusak (1994) define intellectual capital operationally as intellectual material that has been formalised, captured and leveraged to produce a higher valued asset. While many authors use the terms "intellectual asset" and "intellectual capital" interchangeably, there are subtle differences between the meanings of the two. In balance sheet terms, intellectual assets are those knowledge-based items that the organisation owns that will produce a future stream of benefits for the organisation. They are the "debits" or individual items that comprise intellectual assets on the balance sheet, whereas intellectual capital is the total stock of balancing "capital" or knowledge-based equity ("credits") that the organisation possesses. Ideally, the total value of intellectual assets should be equal to the total intellectual capital (Lynn 1998). The distinction between the terms is subtle but not unimportant. Intellectual assets are often intangible assets. They do not have a hard shape like property, for example, or plants and equipment, nor do they have obvious financial value, as do receivables and short-term investments. Indeed, intellectual assets have been characterized as hidden assets because they are sometimes difficult to identify and to assign an economic value to. One way that has been used to uncover and derive the value of this hidden, intangible intellectual capital is to compare the market value of stock to its book value. In fact, the difference between a firm's market value and the replacement value of its physical and financial assets has been used as a definition of intellectual capital.

Choong (2008) defined intellectual capital as a "non-monetary asset with physical substance but it possesses value or it can generate future benefits". This statement again confirms that intangible assets should not be underestimated, even though they are not always recorded on the balance sheet. Paoloni, Paoloni, Demartini, Guidotti and Celli (2010) agrees that intellectual

capital consists of structural, relational and human capital of which human capital is the most important. Kelly (2004) identifies intellectual capital as the potential within an organisation to generate value, but seen as an asset. It is imperative for management to manage these invisible assets, not to be seen as individuals being competent, but to put such knowledge into practice. Kelly (2004) refers to intellectual capital as the intellectual capital characteristics for competitive advantage: case study of a multinational corporation capital resource that originates from relationships between various stakeholders and partners. It is the ability for an organisation to be innovative, to manage change from infrastructure and the knowledge, experience and competencies of its staff. "Knowledge is now acknowledged as the most important resource an organisation has" (Kelly, 2009). Kelly further draws a link between intellectual capital and the management of intangibles. If the organisation follows a traditional controlling approach, then people can only learn what they know they should learn, but an organisation which follows a learning approach will be committed to the management of intellectual capital and people will learn how to learn.

Intellectual capital as according to Vodak (2010) defines intellectual capital as an "organized knowledge which is used in creating wealth of the company". Vodak (2010) rightly points out that technology is developing permanently and thus shifted competitiveness away from production in developed countries, towards more cost effective manufacturing in less developing countries. He further asserts that intellectual capital consists of human and structural capital of which intellectual capital represents patents and protected technologies.

Pienaar and DuToit (2009) reiterates that intellectual capital relates to intangible assets. However, they distinguish between knowledge and intellectual capital, whereby knowledge can be seen as a concept used in general, while intellectual capital is the knowledge component in a

business concept. It is noted also that intellectual capital includes culture as it is a mean of survival in current market conditions. Intellectual capital thus drives a specific behavior within an organisation. As Pienaar and Du Toit (2009) report in their study: the focus of intellectual capital is on management, ownership, the development of knowledge, intangible assets and producers. However, Bukh, Christensen and Mouritsen (2005) view intellectual capital as intangible or knowledge-based assets. It is structured around human and structural capital and the interrelationship which exists between them. There is no reference to customer capital. Even though Bukh et al. (2005) do not include customer capital in their framework, Nazari, Isaac, Manassian and Kline (2009) divide intellectual capital characteristics for competitive advantage: case study of a multinational corporation capital into three subsets, namely, organisational capital, human capital and relationship capital. Franco et al. (2010) have a slightly different segmentation and see intellectual capital as internal structure, through systemising and creating flows of information through a company, and human capital as the knowledge people possess and relation with the environment refers to the interaction with the external environment.

The difference between structural and human capital is ownership. Namasivayam and Denizci (2006) based their study on human and structural capital requirements to understand how an organisation can create, develop, maintain and harvest customer capital. In this case, customer capital is seen as a result of human and structural capital. Alos, Lee (2011) defines intellectual capital as the storage of knowledge resources in an organisation in various forms and it contributes to the generation of a competitive advantage. Marr (2008) defines intellectual capital as all non-tangible assets which are attributable to an organisation and these are part of the value proposition.

5.2.1: Classification of Intellectual Capital

According to Sveiby (2004) and Malhotra (2003) there are four basic methods to classify measurement models for intellectual capital: Market capitalisation method – The difference between market capitalisation and stockholders' equity is calculated. Return on assets method – Tangible asset and the annual financial figures are compared to the industry average. Above-average earnings are then used to estimate the value of intangible assets. Direct intellectual capital method - Components are identified and valued. Scorecard method – Various components of intellectual capital are identified and reflected in terms of scorecards and graphs.

Market capitalisation method

In the market capitalisation method, intellectual capital is computed as the difference between the firm's market capitalisation and stockholder equity. This method is useful for illustrating the financial value of intellectual capital and for interfirm benchmarking within the same industry. One of the disadvantages of this method is that it does not provide information on the component contributing to intellectual capital. The exclusive monetary focus provides only a partial perspective, which is not suitable for the holistic socio-economic and human development approaches often sought by an organization Malhotra (2003).

Return on assets method

With the return-on-assets (ROA) method, the ROA is computed by dividing the pre-tax earnings of the firm by the average tangible asset and then comparing the result with the industry average. The difference is then multiplied by the organisation's average tangible asset to calculate an annual earning from the intangibles. Dividing this average earning by the organisations' average cost of capital or an interest rate gives the value of the organisation's intellectual capital Malhotra (2003). He is of the opinion that this model is not very relevant to government and

public sector organisations, it is of relevance for industry benchmarking and for illustrating the financial value of intellectual capital. Because it is built on traditional accounting rules it is easily communicated between accountants. The disadvantage of this model is it does not contain information about the components that contribute to intellectual capital. It also has an exclusively monetary focus and is unsuitable for holistic socio-economic and human development approaches.

Direct intellectual capital measurement model

With the direct intellectual capital measurement model the monetary value of the intangible assets is estimated by identifying the various components. This model may be used in conjunction with the scorecard method, as it has limited use for assessing and analysing specific aspects of intellectual capital. If it is used to derive standard indicators, these standards must be valid and reliable. This model allows for the valuation of separate components of intellectual capital. It also allows for combinations of monetary and non-monetary valuations. The model provides a comprehensive overview of all the intellectual capital in the organisation. It is event-based and therefore better for relating cause-and-effect compared to financial metrics. The biggest disadvantage is that it is difficult to compare and benchmark.

Scorecard model

In the scorecard model various components of intangible assets or intellectual capital is identified and indicators and indices are generated and reported in scorecards. Composite indices based upon the synthesis of all components of intellectual capital can be created. This model allows for measurement closer to actual inputs, processes, and outcomes. Reporting can therefore be faster. It is also particularly suitable for detection and correction of errors in aligning inputs and processes with the outputs and outcomes. The indicators capture contextual nuances, which

result in rich data analyses that can provide useful insights for policy making. However, contextual influences that facilitate more corrective policy responses make comparison across different contexts somewhat challenging (Malhotra 2003).

5.2.2: Elements of Intellectual Capital

Many scholars suggest that Intellectual capital consists of three elements Sveiby (1997), Saint Onge (1996), and Bontis (1998) which are human capital, which includes experience, the know-how, capabilities, skills, and expertise of the human members of the organization, Structural capital (or organisational capital), which includes the systems, networks, policies, culture, distribution channels, and other "organizational capabilities" developed to meet market requirements as well as intellectual property. Relational (customer) capital, which includes the connections that people outside the organisation have with it, their loyalty, the market share, the level of back orders, and similar issues.

Module 5: Unit 3: Introduction to Intellectual Property

Property is a complex concept to understand. It can be divided into many ways: Movable immovable, tangible-non tangible etc. The division of property as movable and immovable, if it is tangible, was known in Roman law and has been adopted by modern Civil Codes. However, “as a result of the industrial revolution and the rapid development made in the fields of science, technology and culture, new kinds of property came into existence”. New rights and properties like patents, copyright and industrial designs, which came to be known as Intellectual Property Rights (IPRs) received attention due to their unique characteristics. Intellectual property is so broad that it has many aspects. It stands for groupings of rights which individually constitute distinct rights. However, its conception differs from time to time. It is subject to various influences. The change in information technology, market reality (globalization) and generality

have affected the contents of intellectual property. For instance, in olden days because of religion creation of life, say plants or animals were not protected. Thus, defining IP is difficult as its conception changes. It is diverse, challenging and has application in own day today life Yadav (n.d). IP is a section of law which protects creations of the mind, and deals with intellectual creations. It is also commonly said that one cannot patent or copyright ideas. Intellectual property, as a concept, "was originally designed to cover ownership of literary and artistic works, inventions (patents) and trademarks". What is protected in intellectual property is the form of the work, the invention, the relationship between a symbol and a business. However, the concept of intellectual property now covers patents, trademarks, literary and artistic works, designs and models, trade names, neighboring rights, plant production rights, topographies of semi-conductor products, databases, when protected by a sui generis right, unfair competition, geographical indications, trade secrets, etc. Nwokocha (2012).

The World Intellectual Property Organization (WIPO)

The World Intellectual Property Organization (WIPO) is one of the specialized agencies of the United Nations (UN) system of organizations. The "Convention Establishing the World Intellectual Property Organization" was signed at Stockholm in 1967 and entered into force in 1970. However, the origins of WIPO go back to 1883 and 1886, with the adoption of the Paris Convention and the Berne Convention respectively. Both of these conventions provided for the establishment of international secretariats, and both were placed under the supervision of the Swiss Federal Government. The few officials who were needed to carry out the administration of the two conventions were located in Berne, Switzerland. Initially there were two secretariats (one for industrial property, one for copyright) for the administration of the two conventions, but in 1893 the two secretariats united. The most recent name of the organization, before it became

WIPO, was BIRPI, the acronym of the French-language version of the name: United International Bureaux for the Protection of Intellectual Property (in English). In 1960, BIRPI moved from Berne to Geneva.

At the 1967 diplomatic conference in Stockholm, when WIPO was established, the administrative and final clauses of all the then existing multilateral treaties administered by BIRPI were revised. They had to be revised because member States wished to assume the position of full governing body of the Organization (WIPO), thus removing the supervisory authority of the Swiss Government, to give WIPO the same status as all the other comparable intergovernmental organizations and to pave the way for it to become a specialized agency of the United Nations system of organizations.

The mission of WIPO is to promote through international cooperation the creation, dissemination, use and protection of works of the human mind for the economic, cultural and social progress of all mankind. Its effect is to contribute to a balance between the stimulation of creativity worldwide, by sufficiently protecting the moral and material interests of creators on the one hand, and providing access to the socio-economic and cultural benefits of such creativity worldwide on the other.

WIPO's place on the international scene has greatly changed since its beginnings, when it was created to serve as the secretariat of treaties concluded between States. Although WIPO has maintained this function (it currently administers 23 such treaties), together with the consequential one of promoting intergovernmental cooperation in the administration of intellectual property, its activities have not only expanded, but also greatly diversified.

An outstanding example of the expansion of WIPO's earlier work is the growth of its registration activities—that is to say, the increase in the use of international treaties that create the facility of

a single procedure to apply for patents and register trademarks and industrial designs, valid in up to all States party to those treaties. The Patent Cooperation Treaty (PCT), the Madrid Agreement and Protocol Concerning the International Registration of Marks, and the Hague Agreement Concerning the International Deposit of Industrial Designs have all given rise to an increased volume of registration activities. To strengthen this aspect of WIPO's work, a new international treaty, namely, the Patent Law Treaty, came into existence in June 2000: its purpose is to streamline application procedures and to reduce the cost of obtaining simultaneous patent protection in several countries. In its more recent history, WIPO increasingly does not stop short of promoting all kinds of intellectual property. This is only the means to achieve an end, which is to promote human creativity that results in industrial and cultural products and services enriching human society as a whole. Thus WIPO is increasingly involved in helping developing countries, whose creativity has yet to be adequately harnessed, to receive the full benefits of the creations of their citizens, as well as those of the outside world. WIPO's role is to assist them also in the preparation and enforcement of laws, in the establishment of sound institutions and administrative structures and in the training of appropriate personnel. WIPO has given particular attention to the 49 Least Developed Countries (LDCs) and has also given similar assistance to countries whose economies are in transition, in Central Asia, Central and Eastern Europe and the Baltic region. WIPO's cooperation for development program is closely interwoven with governmental and intergovernmental cooperation, including WIPO's agreement with the World Trade Organization (WTO), whereby WIPO assists developing countries in the implementation of WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

5.3.2 Intellectual Property: Evolution and Role in the Nigerian Context

Nwokocha (2012) described a vivid account of the evolution of intellectual property which dovetailed into the Nigerian context. IP has developed over the years, right from the medieval era. In Roman times, it was common for pottery to be embossed or impressed with a mark, for example a representation of a dolphin or the maker's initial. Merchant's marks were used in commerce in Britain from the thirteenth century; William Caxton used the mark W74C, gold and silver articles were hallmark as early as the fourteenth century. By the end of the sixteenth century it was very common for shopkeepers to erect signs illustrating their trade. Traders took to using cards bearing their name and address, often accompanied by a device of some sort, an early form of what we have today as business card. The industrial revolution saw an enormous growth in the use of names and marks in advertising and thus modern trade mark was born. This marked the early development of the modern Trademark Law. In the area of patent, the first recorded patent for an industrial invention was granted in 1421 in Firenze, Italy to Architect and Engineer Filippo Brunelleschi. The claim was that he had thought of a better method for transporting goods on the River Aron. He undertook with the Florentine authorities that to divulge details of his new invention he would be granted a monopoly in respect of the exploitation of the invention within Florence for a number of years. After this, any person would be free to exploit the invention or introduce further improvements to the technology. Copyright awareness on the other hand, arose with the growth of the printing press, and the need for the authors and publishers of popular works to profit for their task. In 1709 the UK Parliament enacted the world's first Copyright Act, the so-called Statue of Anne. This Act established principles of copyright law which remain valid today and have developed to the current Copyright laws existing in most countries.

IP thus continued to evolve over the years with the evolution of brands from indication of source to quality. Few strong brands today have source and quality messages. The Coca-Cola Company no longer merely sells coke; it sells refreshments, entertainments, amongst others. Eastman Kodak Company no longer merely sells film; it sells a “Kodak moment” Modern marks have become hugely informative “data clusters” This is a new age, the age of information, moving from the industrial age and its source/quality based brands. Given the evolution of brand signals from source to quality, brands have become the most powerful communicators in our everyday vocabulary. The bags, the cars, the watches, clothing, pens, and other luxury brands including five star hotels we lodge in, all these make fashion statements about our character. Today, an owner’s mark is his authentic seal; by it he vouches for the goods which bear it; it carries his name/symbol for good or ill. If another uses it, he borrows the owner’s reputation, whose quality no longer lies within his control. A brand that today only denotes source and quality is thus lacking in added attributes or content that consumers now want i.e. “a promise to deliver” in slogans such as TIDE “is so powerful, it cleans down to the fibre”, “never leave home without it” American Express, “we peel it, then fry it” suggesting that this particular potato fries is fresh and organic. Basically, IP law protects the right of owner of a work created by exertion of mind or intellect to use the work exclusively, barring any use of the work without the owner’s prior consent. IPRs are classified into different rights ranging from copyright, trademark, industrial designs, and patents, Utility Model, Plant and Animal Varieties, amongst others. The term IP scarcely describes trademarks and similar marketing devices; but has now acquired international acceptance. IP is indeed becoming a fashionable description of research results and other original ideas, whether or not they fall within the ambit of what the law protects.

The question that constantly raises agitation is how to balance the rights of an inventor or owner of an IPR with the right of the public to share in the work. The patent system is designed to promote innovation and, at the same time, offer a mechanism that would ensure that the fruits of such innovation are accessible to society. The challenge of balancing the private interest of the IPR owner with the public rights of disclosure forms the circle of IP protection characterized by the laws of the States in the region and the world in general. The role of IPRs is to ensure that the IP owners do not lose rights to the information by disclosing it since such information can be used by an indefinite number of persons simultaneously.

On the other hand, copyright has witnessed considerable activity in Nigeria. Considering recent developments particularly in the entertainment industry, it is ironic that Nigeria produces quite a number of home video entertainments with Nollywood leading the chart in Africa; still some of these works are not protected due to lack of awareness of IPRs. The Nigerian movie industry (Nollywood) is third only to Hollywood and Bollywood with the production of over 200 home videos per month4. Nollywood attracts multi-million Dollar investment locally and internationally however the industry continues to struggle with some technical and quality. In 2007, registration of Service Marks was allowed in Nigeria by the then Minister of Commerce acting under powers in section 42 (1) of the Trade marks Act 1965 to extend classification of goods to include services. Although the legality of this has been challenged i.e. whether regulations made by the Minister can amend the Act which, in itself is still awaiting revision.

The National Agency for Food and Drugs Administration and Control (NAFDAC) was established to regulate and control Foods, Drugs, related products imported or manufactured locally and distributed in Nigeria. There is now a cross-reference with the Trademark Office to check true ownership of marks attached to the product to be registered. This practice has helped

to keep off agents who attempt to register marks belonging to foreign brand owners. Standard Organization of Nigeria (SON) collaborates with NAFDAC to ensure that substandard products are not brought into the country. Unlike NAFDAC, SON is empowered to monitor non-edible products. The National Office for Technology Acquisition and Promotion (NOTAP) is charged with the registration of agreements involving the transfer of technology and Technical Service Agreements (TSAs). The NOTAP Act makes it mandatory for parties to subject the agreement to Nigerian law. Parties are to use skills available in Nigeria and may only offer jobs to foreigners in area of specialized skills not found within Nigeria. In this case, training of local staff by the investor/franchisor will be required. Nigerian Communications Commission (NCC) collaborates with the SON to check influx of fake telephone handsets into Nigeria. To achieve this, NCC issues Type-Approval licenses to genuine manufacturers. Therefore any consignment not covered by this license is treated as sub-standard and the same will be confiscated.

The Nigerian Copyright Commission, a creation of the Federal Legislature, is empowered to regulate the music, artistic and literary creations. The Nigerian Broadcasting Commission7, also a creation of the legislature regulates the broadcasting sector. The Registry of Trademarks, Patents and Designs regulate the filings of trademarks, industrial designs as well as grant of patents in Nigeria. Likewise, the National Office for Established by the Nigerian Copyright Act CAP N97 Laws of the Federation of Nigeria, 2004.

The concept of IP until recently was foreign such that individuals and organisations alike did not appreciate that they could commercially exploit their IPRs or that IPRs are assets of immense value. Also there were very few IP Practitioners in Nigeria and those practitioners had a difficult time convincing the Courts to enforce IPRs. There was no respect for IP, our Artists due to loss of revenue to counterfeited work, could not secure loans from Banks who were very hesitant to

grant loans and the entertainment Industry was left struggling. Although our IP laws are outdated, in addition, our law enforcement agents lacked the understanding and capacity in enforcing IPRs. Although there were numerous International Treaties on the Protection of IPRs, they are yet to be incorporated into our local legislation. Nonetheless, Nigeria's success story began when His Lordship Anyaegbunam CJ in 1980 granted the first Anton Pillar order in the case of Ferodo case, and in the intervening years IP protection/enforcement in Nigeria has been transformed. The courts in Nigeria as well as various IP- related regulatory agencies such as NAFDAC, SON, TM Registry, NBC, NFVCB play major roles in enforcement of IPRs and IPR related issues.

On the entertainment scene, the Nigeria entertainment industries have started to reap the fruits of their labour, and the banks are more willing to grant them credit facilities. Corporations providing services i.e. Glo, MTN, Airtel and the banks now recognize the brands that the artistes are selling and use them for advertisements and brand promotions. During the World cup, The Coca-Cola Company discovered the artiste that sang the "Waving flag" song and made him a star. There are also progressive developments at the Nigerian Trademarks, Patents and Designs Registry. There is now regular (quarterly) publication of the Trademarks Journal and the Registry is undergoing computerization and now offers online services, and sharing international best practices. Furthermore, an IP Academy has been established at the Registry, and Service Marks have also been introduced albeit controversial. Today, there are numerous pressure groups and civil society organisations pushing for the protection and enforcement of IPRs in Nigeria. A good example is the Anti-Counterfeiting Collaboration; Nigeria ("ACC") a non – political, non – governmental, organisation to assist in the reform of IP Laws in Nigeria and to bring brand owners, regulatory agencies, interest parties and the public together in order to fight

counterfeiting and piracy in Nigeria. However, Inellectual property includes brand names, discoveries, formulas, inventions, knowledge, registered designs, software registered designs, software, and works of artistic, literary, or musical nature.

5.3.3: Types of Intellectual property Rights (IPR)

Patent

A patent is a type of intellectual property right which allows the holder of the right to exclusively make use of and sell an invention when one develops an invention. Invention is a new process, machine, manufacture, composition of matter. It is not an obvious derivation of the prior art (It should involve an inventive step). A person who has got a patent right has an exclusive right. The exclusive right is a true monopoly but its grant involves an administrative process.

Copyright

It is an intellectual property which does not essentially grant an exclusive right over an idea but the expressions of ideas which makes if different from patent law. Patent is related with invention technical solution to technical problems. Copyright is a field which has gone with artistic, literary creativity, creativity in scientific works, audiovisual works, musical works, software and others. There are neighboring rights. These are different from copyright but related with it – performers in a theatre, dancers, actors, broadcasters, producers of sound recorders, etc. It protects not ideas but expressions of ideas as opposed to patent. Copyright protects original expression of ideas, the ways the works are done; the language used, etc. It applies for all copyrightable works. Copyright lasts for a longer period of time. The practice is life of author plus 50 years after his/her life. Administrative procedures are not required, unlike patent laws, in most laws but in America depositing the work was necessary and was certified thereon but now it has been abolished.

Industrial Design

It's a kind of intellectual property which gives an exclusive right to a person who has created a novel appearance of a product. It deals with appearance: how they look like. Appearance is important because consumers are interested in the outer appearance of a product. It is exclusively concerned with appearance, not quality. The principles which have been utilized in developing industrial design law are from experiences of patent and copyright laws. It shares copyright laws because the design is artistic. It shares patent law because there are scientific considerations. Design law subsists in a work upon registration and communication. It makes them close to patent law since they are also founded in patent law. Duration is most of the time 20 years like the patent law trademark rights law.

Trademarks Rights Law

It is a regime of the law giving protection to graphic representation to words or logos or depending on the jurisdiction question such as sound or smells which are distinctive in nature and serve as source identification. Trademarks perform communication function. Once there is a valid representation, it gives the mark owner an exclusive right. It begins with registration and publication of the mark. But there are exceptions which serve what trademarks registered serve which are not registered. It means they deserve protection even though they are not registered. They exist forever so long as the good with which they are associated continue to be sold. But they require renewal.

Right of Publicity

It protects the right to use one's own name or likeness for commercial purposes.

Geographic Indication

It is indications on products of the geographic origin of the goods. It indicates the general source. The indication relates to the quality or reputation or other characteristics of the good. For example, "made in Ethiopia" is not influenced by the geographical Indication. Geographical indications are sometimes called appellations of origin. For example, "Sheno lega", "Shampagne" (name of a region in France) are geographical indications.

Trade Secrets

It gives the owner of commercial information that provides a competitive edge the right to keep others from using such information if the information was improperly disclosed to or acquired by a competitor and the owner of the information took reasonable precautions to keep it secret. It protects confidential secrets of some commercial value. The holder of the secret wants this information to be protected; Some protect the holder from an unauthorized disclosure of the information. A tort law, unfair competition or contract law can protect such information which is secret or confidential information. The holder (owner) has to do his or her best to keep the information secret. Trade secrets exist without registration as it is to make the information public, for example, the formula of Coca Cola. Information that are protected in trade secrets can be patentable if they are novel and non-obvious. But it is, most of the time, not to make the secret public. However, their full-fledged IP rights are contestable.

5.3.4: Prospects of Intellectual Property Protection

Intellectual Property protection generally play an important role in industrialization and the various rights protected have since become key factors in modern world of international trade

and market-oriented economies. Patents protection ensures fair practices among competitors by protecting individuals whose commercial well – being, moral right and intellectual integrity must be realized as necessary indices before any improvement of standard of living can be claimed. Patents protection also helps economies to establish, in consideration of available natural and human resources, their area of comparative advantage over other competing economies. A resultant increase from this is not only on the per capita net of the national income but also in real income per head. Patents also encourage investment which in turn galvanizes the wheels of development. Trademarks encourage investment especially in the manufacturing industry. This is only possible where there are institutional measures put in place to ensure and assure investors that their trademarks or goods cannot be traded with nor falsified by another competitor. An empirical study for the LDC's (less developed countries) confirm a positive relationship between investment and the growth of GDP (Gross Domestic Product). Moreover, trademarks are cipher around which investment in the promotion of a product is built and that investment is a valuable that deserves protection as such, even when there is no abuse arising from misrepresentations either about origin or quality. As a focal point of economic development, trademarks when protected, are one way of encouraging entrepreneurial talent especially in the private sector and enhancing creativity and productivity and leads to economic emancipation both for the individual and the nation at large, this can help raise leaders of quality with the right attitude in ranks of government and help increase the per capita standard of living. This is because there is a close relationship between productivity and real income per worker and since a nation must produce a more goods and services per worker to enjoy more goods and services which means a limited domestic market lack of demand for most non-agricultural goods, this could hamper with industrialization and make it difficult for one country to compete favorably with another country.

Designs protection also encourages technological advancement which is one of the hallmarks of industrialization. Technological advancements in this case involve the development of new and improved techniques for the manufactured goods which is based on invention and innovation. This suggests that there could be no real industrialization in a country where there is absence of adequate Intellectual Property protection. It is also evident that this protection helps to ensure fair return of investment and inadvertently benefit the consumers and the public at large by promoting fair competition and honest trade practices. There is also no shred doubt that a good and effective system of design protection encourages creativity and promotes more aesthetically attractive products. Copyright industry represents, the fastest growing sector of economies especially the developing ones, creating considerable employment generation and having an increasing export performance and potentials. The contribution of this industry to the Gross National Product (GNP) is also bound to increase in the years to come, in a number of rapidly growing developing economies, which are taking up both the new challenges and the new opportunities thrown up by the increasing borderless dimension of trade and economy. The internationalizati on of socioeconomic activities and the fillip it has provided to the information technology industry has made some developing economies active participants both as agents and beneficiaries of the change.

5.3.5: Challenges of Intellectual Property Right Practice in Nigeria

Nwokocha (2012) highlighted certain challenges associated with the practice of intellectual property in Nigeria. First, the administration of IPRs in Nigeria is incapacitated by inadequate skills and competence. Persons involved in its administration are usually not experts. There is acute shortage of manpower in the qualitative sense. Secondly, the infrastructure for operation of IPR in Nigeria is still largely undeveloped. Information Technology has not been fully developed

and applied towards encouraging proper research by IP experts, students and scholars. Filing of applications is always slow; the process of grant of IPR could take years due to the limited infrastructural facilities11 at the Trade mark and Patent Registries. These infrastructure deficiencies have not encouraged business development in Nigeria and with bottlenecks in passage of goods and services across borders in the region. Thirdly, piracy and counterfeiting have become an important factor frustrating business development in Nigeria. Nigeria is a big market with so much potential for growth however, the country has not been able to achieve maximum potential due to acts of piracy and counterfeiting and remains a gateway to the rest of Africa for counterfeit products; fake goods are constantly being offered alongside genuine goods to consumers. The penalty for offence of IPRs is not sufficient to deter would-be offenders. The only remedy for an owner in a civil action in court, leaving except in the area of copyright where the owner can institute a criminal action thorough the Nigerian Copyright Commission (NCC). Fourthly, it is quite disappointing that after decades of independence, Nigeria has not made any significant change in its IP laws, the laws have remained outdated. However two major development of IP law in Nigeria are instructive. First: Nigeria still lags behind in developing an indigenous law that will address basic issues on IPRs germane to its economy and social cultural environment. In the area of trademarks, there have been developments of other forms of marks different from marks relating to goods. There are service marks, scent marks, sound mark and slogans. The grant of patent on some plant varieties and seeds already in force in England has been recognized and regulated in Kenya and South Africa and it is indeed a milestone development. Nigeria and some other sub-Sahara Africa still regard plant varieties as non-patentable in their laws. It is hoped that this will be corrected in the Bill amending the Trademark Act of 1965 to protect and conserve the rich natural and bio-cultural products in the

country. Secondly, the level of IP practice, jurisprudence and enforcement is not fully developed. The judiciary is not up to date with issues relating to IPRs. Most of the IPR litigations are in the area of trademarks while there are very few on copyright and even fewer in patents. Also most IP cases are settled by the parties before they get to the appeal courts. This does not allow for proper catalogue of case law in this practice area.

Patent Protection and Public Policy

The essence of IP development is to help to increase public knowledge for development and also provide incentives to create knowledge. However, a major issue in the development of IP has been how to balance economic gain accruing from the invention and ensuring that the creations/ works of Intellectual Property benefit the general public for the common good of all. For instance, how do you allow a patentee to continue to enjoy his rights without denying the public of some human rights? Particularly in the case of important drugs such as Polio Vaccines and HIV drugs etc. This is why the issue of patent, public health and public policy requires special attention. Many have argued that the prevailing system does not adequately address public health crisis. It is argued that the commercial incentives provided by the patent system are not sufficient to ensure the development of new products in certain areas, for example, in respect of neglected diseases, and that patent rights, which are enforced on the basis of commercial and market-based considerations, prevent access to, or lead to an increase in the prices of essential medicines such as HIV/AIDS drugs. However, the patent holders contend that by ensuring long-term patents and a small margin on the costs of drugs, they are rewarded for their years of toil on the one hand, while the public on the other hand is, invariably assured of much needed innovations. In the light of these concerns, pharmaceutical corporations have been accused of opposing attempts by developing countries to reform their patent laws. The resolution of this conflict lies in the better

understanding of public health. The achievement of public health objectives must be the guiding principle for the implementation of IP rules and policies in the pharmaceutical sector. This will be based on certain key principles and guidelines.

According to a WIPO report, developing countries such as Zimbabwe, Malaysia, Mozambique and Zambia recently are prepared to embrace the TRIPS flexibility initiative in the areas of patent and public health. In Nigeria, a pharmaceutical company was once engaged in discussions with NAFDAC to explore the possibility of importing HIV/AIDS drugs into Nigeria to be sold on a non-for-profit basis. Another viable method of narrowing the divergence between the patent system and public health objectives is to encourage the government to fund important scientific research thereby making the drugs more affordable. It is advocated that developed countries should implement the provisions of the Doha Declaration on TRIPS and public health, particularly those dealing with the issue of compulsory licenses to less developed countries that cannot produce these vital drugs.

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