LESSON PROPER

Peculiarities of entrepreneurs

Every business Start-up aims specifically at growth and profit. Venturing into entrepreneurship is often accompanied with various forms of risk such that it involves confidence and initiative for interested business men to come on board. The pivotal factor of an investor is readiness to undertake new ventures - readiness to put effort into new, often risky, ventures or activities. Entrepreneurs are also noted for initiative, innovativeness, creativity, inventiveness, originality; they are venturesome and bold. Entrepreneurs are different from run-of-the-mill business tycoon. They are constantly creating and generating ideas to solve societal problems (Akinyanmi, 2013). Other entrepreneurial attitudes include:

- Passionate with ideas
- Full of vision – always "dreaming" and generating ideas
- Resilience – painstaking to follow-up a project irrespective of the prevailing tides
- Always in pursuit of knowledge For a nation to prosper industrially and thus economically, the citizenry must possess:
- A strong and vibrant entrepreneurial base of adventurous individuals burning with energy, passion, creativity and acumen.
- The researchers, scientists, technologists and engineers of such nations grow-up in an environment in which entrepreneurship is a culture.
- The civil populace of such nations is driven by values of diligence, resourcefulness and given to venturing.

Based on these, Entrepreneurship forms the foundation upon which science, technology and the creative industries of these societies are built (see Figure 1). It is the key ingredient in the transformation of an innovative idea to innovative product or commercialization.

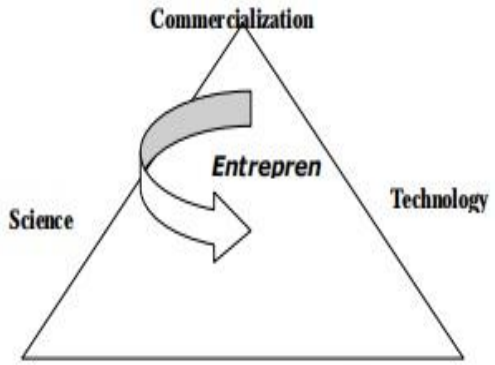
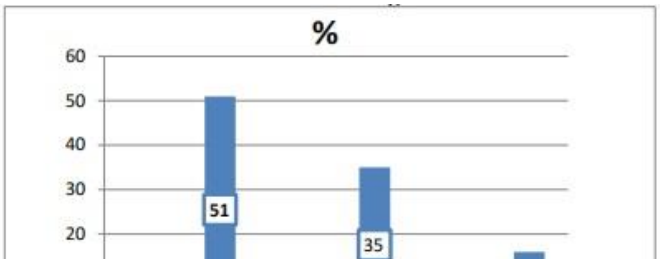


Figure 1: Entrepreneur societal Prism

4.2 The material world and industries

The Material world consist of science and engineering professionals involved in research and development, extraction, and production of materials that are used in manufacturing and construction industries. An industry is an organized economic activity connected with the production, manufacture, or construction of a particular product or range of products. Industries are involved in either large-scale production, medium, small scale and micro businesses. Globally, Small and Medium scale Enterprises (SMEs) are reported to provide 50% of employment. Globally, 90% of registered businesses are SMEs. According to EG (2012), SMEs contribute to economic growth in both high and low income countries by sustaining employment and contributing to GDP. They contribute 16% for low income countries, 35% for medium income countries and 51% for high income countries.



In countries at same level of development with Nigeria, SMEs contribute a much higher proportion to GDP than currently observed in Nigeria; compared to other emerging economies that have embraced technopreneurship. Nigeria has historically shown lack of commitment to building a strong SME sector.

These economies have shown consistent commitment to the development of SMEs by implementing: access to finance and financial incentives, basic and technological infrastructure, adequate legal and regulatory framework, and a commitment to building domestic expertise and knowledge (OyelaranOyeyinka, 2007).

In Nigeria, government policy is targeted more in getting foreign investments inthe economy with the hope that our skilled workers will be employed. Unfortunately, there is a negative fallout such as the instance seen in the Mining industry where they exist of these foreigners left the industry Moribund. Mining activities are now left to artisanal miners; the outputs are not significant enough to influence the GDP positively. This gap in domestic expertise in the mining and other similar industry has resulted in an absence of Nigerian professionals in these fields picking up the challenge to set up business enterprises in their areas of specialization.

In Malaysia for instance, SMEs accounts for 99.2% of all businesses Gross Domestic Product (GDP) and 65.3% of employment in 2006 alone. In Nigeria, the statistics are similar but with some important differences. About 70% of the country's employment is provided by SMEs, but they deliver only 10% economic values added (EVA). This is compared to an average of 55% employment and 25% EVA in other developing economies and also 60% employment in developed economies of the world (Kayode, 2012). These statistics show that Nigeria's SMEs are not as productive as they should or needed to be.

4.3 Innovation as Link between Technology and Industry

According to Oxford Advanced Learners Dictionary, Technology is the applicability of scientific research in the industries. Technology finds its application in industry (an enterprise) where innovations are nurtured till new products reach the hands of the end users. The specific tool for the entrepreneur is Innovation (Cukier, 2006).Innovation is the application of better solutions that meet new requirements. Innovation occurs when an invention is commercialized. The lifeblood of corporate success is bringing new product to the market-place [Jobber, 2001]. To be a successful entrepreneur therefore, a material scientist and engineer must be innovative - applying advanced technique to production. There is a strong connection between technological development and entrepreneurship. Technology makes entrepreneurship dynamic; it encourages diversification and economies of scale. A number of reasons that have slowed down the growth of SMEs in Nigeria are poor infrastructure, poor skills base, limited access to finance, limited access to market, low absorption of research and technology, and inadequate power supply. Problems in industry can only be solved by the creativity of both the entrepreneur and the researchers and the unavoidable support and cooperation of the government (Haruna, 2013). There must exist a way of making technologies available and affordable. Results of Research Institutions such as the National Agencies for Science and Engineering Infrastructure (NASENI) Abuja and its counterpart agencies in production techniques should be made available regularly to SMEs. There must be an enabling platform for creativity to emerge. Experts from Industry, government and the academia must collaborate to consider the forces that promote and impede innovative entrepreneurship (Cukier, 2006). According to Min Basadin, there are two parts to being effective in an organization (industry) or an enterprise:

- Knowledge about your job – Technology
- Process and process skill (Min, 1995)

Like technology, the essence of entrepreneurship in industry is to facilitate meeting the need of the entrepreneur in solving society's problems. For instance, filament light bulbs have been popular for domestic lights; presently research and development has given the society energy saving bulbs that give considerable energy cost savings compared with incandescent light bulbs. Innovative entrepreneurship is becoming the cornerstone of economic growth in the developed and

developing world. Government and the industry can create the platforms that tap into people's creativity in whatever way it is expressed, rather than regarding innovation as the domain of a small handful of people. Industries in the developed world spend huge sum annually on research and development, with the eye to fostering innovation and a culture of risk and reward (Cukier, 2006)

The world of competition

Competition is the process of trying to do better than others. In the world today, organizations face a common challenge which is the need to improve their performance in other to adapt to global changes. People who deliberately innovate, or make continuous changes in their products and processes, help their organizations win an edge in the world of advanced technology. The basic key to maintaining competitiveness lie in the ability to change and improve what we do and how we do it. According to Paul Mott - University of Pennsylvania, in the world of competition, an effective organization, institutions etc displays three characteristic simultaneously (Molt, 1972). These are:

Efficiency

This involves a well structural, stable, routine for delivery of goods and services in high quantities, quality and at low cost. Efficiency allows an organization to implement and follow routines. In this world of advance technology, efficiency alone is not enough to meet the global market (Molt, 1972).

Adaptability

Adaptability means mastering the process of changing the routine. It is a proactive process. It allows an organization to deliberately and continually change its routine to improve quality, raise quantities and reduce costs. Innovation is the key to Adaptability. It requires looking outside the organization for new technologies, ideas and methods that may improve or completely change its routine. Adaptability also involves processes based on knowledge acquired from earlier work done. Adaptability goes hand in hand with Reverse Engineering which involves studying to reproduce an existing material or technology. Here adaptability helps you not just to reproduce but to improve on an existing model so as to meet the demand of clients. This means that as technopreneurs, we must not just study the technology of product and services but we must study the market so as to adapt the innovation to meet the market demand. In other word we must mainstream innovation (Molt, 1972).

Flexibility

This is the ability of an organization to react to unexpected emergencies quickly. It allows the organization to deal with the disruptions while maintaining its routine. Most companies are finding that it's no longer enough to rely solely on flexibility in order to cope with change. Instead of merely reacting to competitors' product introduction, the organization must anticipate such a change by "leapfrogging". The organization must bring to the market, goods and services that meet a need that consumers themselves are yet to recognize thus leading its consumers and creating new market.

Challenges encountered in research and development Perception

Challenges encountered by researchers' dates back to the days of our scientific fathers: Isaac Newton (1642 – 1727), Albert Einstein (1879 – 1955), Thomas Edison (1847 -1937) and so many others. Most of these renowned researchers were driven by their passion and willingness to learn and they were not afraid to fail. In fact, failure on its own is a result and thus a discovery. In our contemporary days, great exploits in research and development have not been without factors that hinder

many research works. These factors include: government policy, human capacity development, lack of facilities, and lack of standard for confirmation, capital, market and energy. Research is generally not appreciated .Many Nigeria manufacturing companies do not invest on R&D that could lead to the development of breakthrough products for them. Instead of being trend setters, they choose the easier option which is to follow trends. Conducive Creative Atmosphere An individual is more creative, with little or no social hindrances especially in respect of right to speak, associate, think or create ideas. These are inalienable requirements for a conducive creative environment which in turn favors entrepreneurial innovations and technological breakthroughs. However, the culture and environment that promotes innovation appears to be missing in many science and technology based industries. Managers in these organizations ought to concentrate more on creating and promoting such environments in their establishments.

Funding

Many innovative ideas die at the point of conception for lack of fund or capital. The challenge of capital has strangled most research work at developmental stages. Public and private establishment find it difficult to invest in breakthrough projects at such stages. Most people tend to identify with research work when there seems to be a glimpse of success .This tends to hinder or slow down projects. Way forward

With all these "discouraging" factors around us coupled with the fact that our nation must not be left behind in the development of advanced technology and global business practice, solution in the positive direction is imperative. In that wise, creativity training, and training on creative processes and process skills (entrepreneurial skills) – a fulcrum for development is needed. These could be combined with acquired experiences. The intellect is with us, it is in us, and so technology has come to stay. Promoting innovative entrepreneurship should thus be a central concern for policy makers. This is essential for modern governments. It requires that government officials themselves act entrepreneurial in implementing policies, and promoting new forms of partnerships with industry, academia (Technology) and civil society (Cukier, 2006). The success of young and upcoming innovators will be dependent on whether or not today's leaders

accept this challenge. We must use technological innovations to empower ourselves and grow our economy. Local technopreneurs need to take advantage of the numerous unsatisfied wants in Nigerian environment.

Technopreneurship

The process of organizational creativity is a process of mainstreaming innovation or continually finding important corporate problems, solving those problems, and, implementing the solutions to satisfy the global market is referred to as Technopreneurship. It lays emphasis on integrating technology with entrepreneurship. Technopreneurs are entrepreneurs who are into the core businesses involving technology based industries. They make use of technology to come up with innovative products through the process of commercialization. Potential technopreneurs must be equipped with both technical and business skills. Technopreneurs continually go through an organic process of constant improvement and always try to redefine our dynamic digital economy.

Developmental steps

In light of recent events in the Nigerian macroeconomic environment, SMEs have compelling growth potential and like other emerging economies are likely to constitute a significant portion of GDP in the near future. Technopreneurship requires tertiary and professional development programs and training to produce strategic thinkers who will have the skills to succeed in a dynamic global environment. Technopreneurial development programs should be introduced to sharpen business skills and market savvy. This is aimed at producing scientists and engineers who are productivity

driven, technologically capable and competitive both locally and internationally.

Continuing Professional Development (CPD)

To improve job performance we need to employ creativity in skills acquisition, and trainings on creative process as well as process development skills. This requires Incubation workshops, technical session, seminars, and conferences on related fields of interest and issues that are to be handled to improve job performance. This process also involves keeping things simple and keeping an open mind. Asking "simple" questions or digging for facts that others took for granted. Creating and Nurturing an Innovative Culture This involves creation of a corporate culture that promotes and rewards innovation. Adewoye asserts that national innovation system will provide the environment to apply science and technology to solving practical problems such as increasing productivity and competition in the global economy. Attitudes and actions that can foster an innovative culture are represented in the block diagram below.

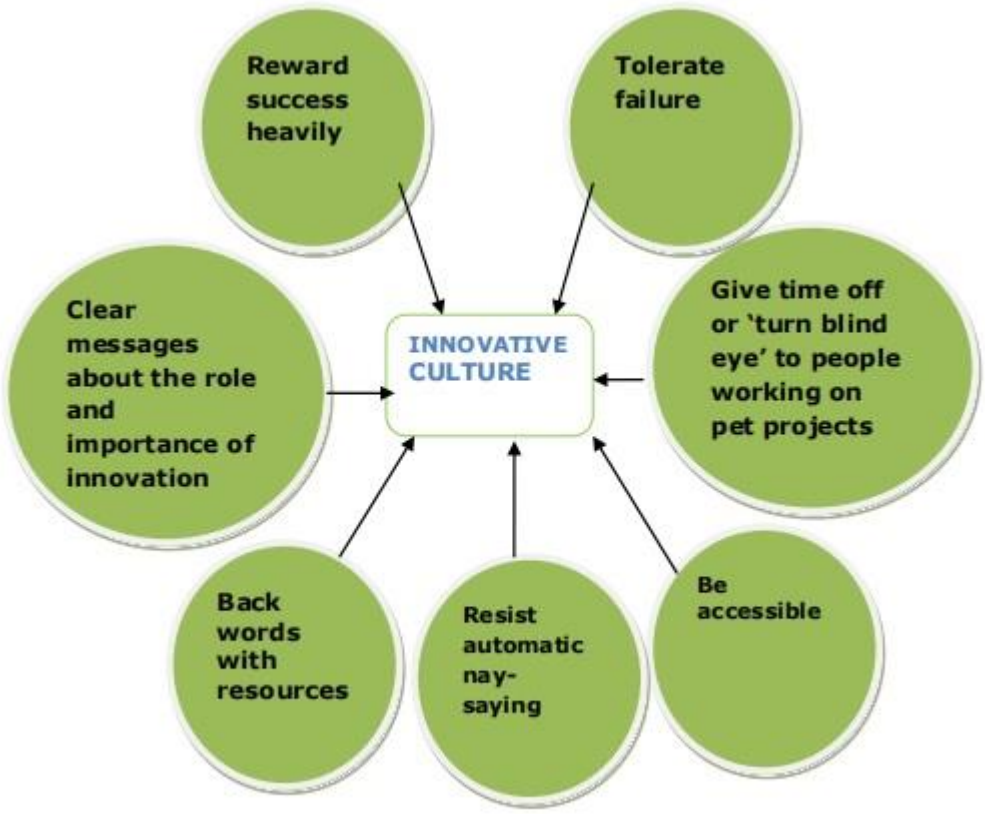


Fig 3: Creating an innovative Culture (Source: Jobber, 2001)

Project Teams

We should be aware that in future the concept of an all-round qualification will become obsolete. We most certainly will have to apply the principle of division of labor to this problem much more stringently. People have different skills, attitudes and preferences. For example, instead of trying to teach an engineer how to become a smart salesperson , it seems better to separate these two functions and allocate them to two different persons. This will require an effective communication and teamwork between the engineer and the marketer (Faltin, 2001).

A project team involves bringing together of staff from various departments on a developmental project. To compete in today's global marketplace companies must move from rigid functional organizational structure to a highly integrated one (Jobber, 2001).Such that the research staff understands the market, and the marketing staff understands the technology and can advice the research and development staff on product demand. A project team network can represented thus:

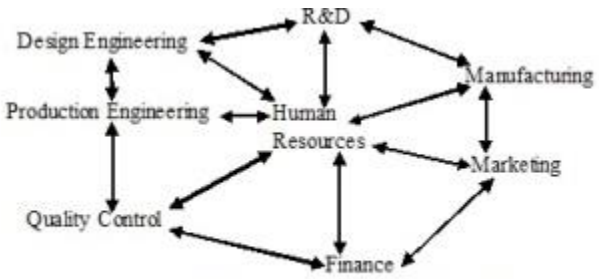


Fig. 4: Representation of inter-relationship of Project Team (skunk) work

Government Involvement (Management)

Vital role of Government in providing an enabling environment for SMEs can't be overemphasized. The more successful emerging markets have high rankings as a result of government support in enabling the private sector, and SMEs specifically. SMEs surveys show weak overall support from Government as shown in figure 5 [Oyelaran-Oyeyinka,2007]. We urgently need proper advocacy and exemplary leadership. Government needs to be committed to creating an entrepreneurial ecosystem and promoting an entrepreneurial culture. This entails providing strategic direction and polices for both the academia and the industry, providing enabling environment by making available basic infrastructure accessible for work, increase funding, and encourage teamwork between professionals in different fields of study. This will enable each sector to understand the importance of the other in the process of moving our nation forward. Development finance institutions like The Bank of Industry will have desks to attend to the promotion of technological innovation. By this, they will be more inclined and open to funding breakthrough projects arising from technological innovation. Government policy will need to be deliberate to ensure loans are given at the lowest rates possible.

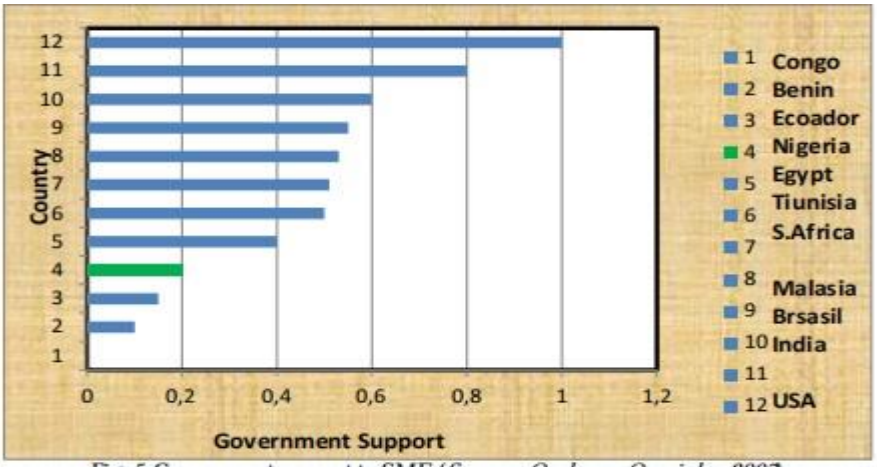


Fig: 5 Government support to SME (*Source: Oyelaran-Oyeyinka, 2007*)