



HARNESSING EFFECTIVE LOCAL TECHNOLOGY FOR ENTREPRENEURSHIP DEVELOPMENT AND THE CONSTRAINTS OF MAINTENANCE CULTURE IN NIGERIA

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Abstract

The study examines the problems of harnessing effective local technology for entrepreneurship development and the constraints of maintenance culture in Nigeria with a view to identifying appropriate policies and strategies for enhancing and maximizing the utilization of available local resources for entrepreneurship development in Nigeria. The research design involves collection of data from existing records and findings of views and opinion on the subject matter through the use of structured questionnaire. Stratified sampling technique was used to select the respondents for the study. The instrument used was validated and pilot tested to ascertain the internal consistency using Cronbach Alpha. The reliability coefficient

of the questionnaire was 0.79. Data obtained were analyzed using mean, one-way analysis of variance, percentages and frequency count. A

KEYWORDS:

Technology
Entrepreneurship,
Development,
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Culture,
Government
Policy.

large proportion of the respondents are of the view that the poor state of Science and Technological innovations in Nigeria, coupled with negative technological responses, lack of a coherent national policy guideline that is properly coordinated, lack of sound educational system that emphasizes the culture of

maintenance with adequate infrastructure, focusing on areas of comparative advantage, lack of collaboration between industry and academia among others were indicated as major problems and issues that have hindered effective harnessing of local technology for entrepreneurship development and maintenance culture in Nigeria. The study is of the view that real entrepreneurship development and

maintenance culture must be essentially and deeply rooted in the people and the policy of government. There is need for a co-ordinated approach to the nation's maintenance culture.

INTRODUCTION:

The concept of developing effective local technology and maintenance culture in Nigeria is not a new phenomenon. The identification of the ways and means of making this concept a reality has pre-occupied our policy makers for very many years. There have been posers on how we, as a nation could harness our human and material resources to make the country technologically self-reliant and ensure that Nigerian citizens, develop a habit of better husbandry of available infrastructural facilities, equipment and machinery.

While cooperative relationship with industrialized and developed countries is a reasonable proposition for developing our own technology, the determination of a country to be self-reliant is of paramount importance. Akinrinade (1988) had earlier argued that unless a country can provide for its own requirements as much as possible, it would fall into a dependent relationship that saps its vitality and in the last resort, could lead to self-destruction. Thus a country that relied totally on foreign sources for its development can never be said to be independent and to that extent its sovereignty is tenuous and theoretical. In time of crisis, such an economically independent nation cannot count on national unity, not to talk of military viability if the need for the defense of the nation arose.

The call for self-reliance, however, should not be taken to mean an appeal for isolation and insulation from progressive international community. All progressive nations of the world today necessarily have to subscribe to mutual co-operation, particularly in the area of technological development. All national governments, however advanced, need international economic relations. In real terms, they acquire easy and reliable access to world markets for their exports and imports,

need capital and access to those technology developed in other countries which they find useful or adaptable. It is evident, therefore, that international co-operation is very important in an interdependent world we are in today. Indeed, the degree of success achieved by a country in terms of international co-operation and collaboration often determines the extent to which policies of basic technological needs entrepreneurship development and self-reliance can be pursued.

The issues of national development as outlined above lead us to ask what sort of development strategy would meet our technological needs, entrepreneurship development and create an economic structure that would sustain social progress and harmony even in the present times that Nigeria is facing serious economic constraints occasioned by Corona pandemic. A plan, in the sense of a consistent set of goals for a fixed period, evolved on the basis of a number of assumptions, is one instrument that can be useful in deciding the shape of the strategy. In any country, where planners with educational and economic orientation far removed from the bulk of the population find it difficult in grasping the social reality of their environment. To this extent, we believe that sample field surveys and findings as well as relevant statistical record keeping, would be helpful in making better plans and realistic corporate decisions. We must add that those working on macro development strategies need to spend part of their time in rural areas so as to interact as close as possible with the realities of the environment for which they are planning.

While economic growth in the past 25 years has been fairly rapid, Nigeria now has an economy less capable of surviving without the oil revenue than it was in the 1960's. For example, Nigeria now imports food in proportions far more than it used to do in the 60's. In addition, the unit costs of such imported food items have increased considerably as a result of the current exchange rate of the Naira. In many respects, the physical infrastructure available for technological development have deteriorated often due to insufficient supply of skilled manpower for maintenance. However, we believe that it is not too late to change our strategy and direction and prepare for the future on a sound and reliable technological base. This cannot be achieved by mere economic growth but by a well-structured economic development strategy that is based on the basic need approach. In this respect, according to Akinrinade (1988) emphasis should be placed more on technological entrepreneurship development, more on maintenance and less on grandiose new project, more on labour utilization and

less on capital intensive investments which provide little or no job opportunities. This is the motivation for this study to examine the problem of devising strategies for an effective local technological entrepreneurship development, and the quest for adequate maintenance culture.

PURPOSE OF THE STUDY

In the peculiar experience of our country, it is obvious that no concerted effort had been made to derive as much knowledge and technical know-how as possible through better management of available local technological facilities. Consequently, the comparatively rapid growth which Nigeria experienced, particularly, from 1973 to 1981, the period of the so-called oil boom, was not matched by careful planning, development and sustenance of local technological knowledge and facilities. As more and more equipment and facilities were imported into the country, more and more citizens become exposed to the use of increasingly sophisticated gadgets often without feeling any particular responsibility for acquiring the knowledge and skill required for their maintenance and repair not to talk of making use of the experience to advance on the country's local technology.

The cumulative result of this apparent lack of any visible habit for careful husbandry of acquired technology is that everywhere, the society is beset with the ugly scenario of dilapidated infrastructural facilities and obsolete equipment and machinery littering homes, offices, factories and highways. It is pertinent to mention that, such ugly spectacles should keep reminding us of our habit of wasting valuable assets and thwarting useful opportunities to advance industrial and technological development of this country and the need for us to make amends. It should be emphasized that while policies may be suggested sector by sector, a development strategy oriented to basic technological needs is a package not a list of policies.

This point carries two important corollaries. In the first place, those planning for technological development at any level (Federal, State and Local) need to look on the task as whole, searching for useful links and attaching priorities to those policies with multiple pay-off. Secondly, programmes geared towards the promotion of technological advancement and the development of maintenance culture should be well co-ordinated and harmonized. For example, an improvement in our telecommunication system will no doubt increase productivity at all levels and in all sectors of the economy. We strongly believe that

as people realized that they are not condemned to live the rest of their lives in the present economic hardship, they will be increasingly determined to take steps to improve their lots through better use of available resources and skills. With greater individual and communal interest and involvement, people would become more and more enterprising and articulate in expressing support for government development strategies, hence the need for the study.

The study is set out to examine the problems, constraints and prospects of the current state of the available local technology for effective entrepreneurship development and maintenance culture with view to identifying appropriate policies and strategies for enhancing and maximizing the utilization of available local resources for technological development in Nigeria.

Literature Review

Technological Development

Faluyi (1998) considered technology as the application of scientific principles and engineering techniques to the production of goods and services, and argued that there is no one standard technology as there exists, rubber technology, wood technology, brewing technology etc. Faluyi further explained that in each case one is talking about the application of a body of scientific knowledge to the working of various materials involved in an engineering environment. Such technology defers and cannot therefore be the same, but rather relevant technology when one considers that it is the application of science, which is considered as universal. Through a multiplicity of processes “technology” (here meaning a disciplined and highly instrumental application of technology) according to Kitwood (1984) has gradually emerged as a system of belief and action capable of encompassing virtually every part of human existence.

Ikoku (1988) defined technology rational utilization of energy in any process designed to satisfy a need. Ikoku further observed that, “technology so defined, is as old as man. Technology can be traced historically to the beginning of time to be man’s quest to improve his way and quality of life. While it is recognized that the indices of technology have become more involved and complex in recent years, it is essential to underscore this primary meaning of technology since it enables us to draw a fundamental distinction between technology and machines and to avoid the view, which is erroneous, that technology is something imported into Africa from Europe. For it is our contention that the several processes without which life could not have been sustained by our forebears and which are still

practiced even in today's Africa, represent viable technologies which we have ignored at great cost to our better understanding of our environment and the prospect of raising the level of production, entrepreneurship and innovation.

Ikoku earlier argued that technology must penetrate every aspect of our life and culture if it is to take root.

In the eighties, the Federal Government came out with a policy on Science and Technology which aimed at:-

- i. Increasing national awareness in Science and Technology and their vital role in national development and well-being;
- ii. Directing Science and Technology efforts along identified national goals;
- iii. Promoting and translating Science and Technology results into actual goods and services;
- iv. Creating, increasing and maintaining an indigenous Science and Technology base through research and development;
- v. Motivating creative output in Science and Technology;
- vi. Increasing and strengthening theoretical and practical science base in the society; and
- vii. Increasing and strengthening the technological base of the nation.

Until quite recently, there did not seem to be any deliberately designed, let alone, an operative technology policy in Nigeria. Rather, the government had always indicated a desire to acquire technology as only part of a statement on milestones for national development plans. There had never been any publicized set of policy that impinge on technology acquisition. Policies of such nature are imperative, consequent upon the hard fact, the developed world will not consciously and voluntarily transfer her technology to the under-developed world. It must also be remembered that, the present strangle-hold of the industrialized countries over the less industrialized ones, by its very nature, is predicated by the monopoly of technology by the former. Technology acquisition impinges upon evolving a set of credible policies and strategies that will lead to the development of technology.

Policies in the main, are a set of state government stand and direction to achieve a set of objectives in matters affecting the nation. This means that, for a stated objective to be achieved, there must be an enabling government policy direction. Local Technology, therefore, must be consequent upon a set of enabling functional policies of government. Such policies according to Ikoku usually define the boundaries to traverse as well as the 'paraphernalia' that go with them. The

Federal Government's policy of self-reliance was however silent on the perspective of self-reliance and determination of specific sub-policies and strategies to cover these. However, self-reliance in technology demands that Nigerians take over the reins of steel development and technology as a good starting point, if we all agree that, steel industry is indeed, a mother industry. The process of technology acquisition enjoins total mastery of the operation and maintenance of the foreign acquired primary units of production as a take-off point.- (Ikoku 1988)

Technology on the other hand according to Ihueze, Okpala, Okafor and Okonkwo (2015) refers to the body of organized knowledge, tools and machines, used by man to manipulate his environment for his general good. It involves the adoption of scientific knowledge or inventions to develop and produce goods and services useful to man thereby solving everyday problems or facilitating tedious human activities. It is a practical problem solving enterprise, which is propelled by scientific discovery or by societal need.

Entrepreneurship Development

Stevenson and Jarillo (1990) defined entrepreneurship as the process by which individuals pursue opportunities without regards to resources they currently control. Hisrich, Peter and Shepherd (2009) define entrepreneurship as the process of creating something new with value by devoting necessary time and effort, assuming the accompanying financial, psychic, and social risk, and receiving the resulting rewards of monetary and personal satisfaction and independence. According to Hisrich et al, each of these definitions views the entrepreneur from a slightly different perspective, they all contain similar notions, such as newness, organizing, creating, wealth and risk taking. Yet each definition is somewhat restrictive, since entrepreneurs are found in all professions – education, medicine, research, law, architecture, engineering, social work distribution and the government.

This definition stresses four basic aspects of being an entrepreneur Hisrich et al (2009). First, entrepreneurship involves the creation process creating something new of value. The creation has to have value to the entrepreneur and value for the audience for which it is developed. This audience can be (i) the market of organizational buyers for business innovation (ii) the hospital's administration for a new admitting procedure and software, (iii) prospective students for a new

course or even college of entrepreneurship, or (iv) the constituency for a new service provided by a nonprofit agency.

Second, entrepreneurship development requires the devotion of the necessary time and effort. Only those going through entrepreneurial process appreciate the significant amount of time and effort it takes to create something new and make it operational. As one new entrepreneur so succinctly stated, “While I may have worked as many hours in the office while I was in industry, as an entrepreneur I never stopped thinking about the business”.

The third part of the definition involves the rewards of being an entrepreneur. The most important of these rewards is independence, followed by personal satisfaction. For profit entrepreneurs, the monetary reward also comes into play. For some profit entrepreneurs, money becomes the indicator of the degree of success achieved. Assuming the necessary risks is the final aspect of entrepreneurship development. Because action takes place over time, and the future is unknowable, action is inherently uncertain. This uncertainty is further enhanced by the novelty intrinsic to entrepreneurial actions, such as the creation of new products, new service, new ventures and so on, which will require continuous maintenance.

Many aspects of technological Entrepreneurship ventures above will require effective maintenance actors for them to survive, Oni and Igwe (2008) had earlier argued that maintenance of capital goods in a technologically backward environment constitutes a major constraint to the development of a maintenance culture.

One of the problems faced by many entrepreneurship ventures is that majority of the new businesses fail, Barringer and Ireland (2013) argued that overwhelming proportion of the businesses which disappear are small owner managed businesses for lack of maintenance culture. Evidence from other countries both developed and less developed according to Makun (2003) suggest that this pattern is often repeated.

MAINTENANCE

Oni et al (2008) define maintenance as a combination of activities carried out periodically to retain a structure or machinery in, or restore it to, a functionally acceptable condition. Within a technological-cum-cultural context, therefore, maintenance is the provision of adequate and systematic support or services for the purpose of facilitating the survival and functional continuity of a given aspect

of society, be it technology or the cultural features that promote the survival of that technology. Oni et al (2008) categorized maintenance as follows:

- i. Breakdown Maintenance: Occasioned by a malfunction or failure of a part or the entire system, and necessitating temporary cessation of use or production, as well as repair or reinstatement.
- ii. Preventive (or anticipatory) Maintenance: Involves inspection and servicing in order to detect and prevent damage or premature wear before breakdown. Where maintenance is in accordance with a certain periodically specified by the equipment supplier or contractor, it is referred to as “periodic”. Where it is not necessarily in response to a perceived fault or problem, it is regarded as “routine”. Examples of preventive maintenance are lubrication, systematic cleaning, overhauls and routine inspection.
- iii. Plant Improvement Maintenance: For purposes of facilitating operations, enhancing maintainability, involving the quality or quantity of the output, or assuring personnel safety.

Culture

There is no single universally accepted definition of culture (Omotehinshe et al., 2015) because it is a difficult term to define. Definitions tend to vary from one country to another, one continent to another. What is morally acceptable in one country may be abominable in another. Culture is that complex which includes knowledge, believe, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society.

(Tyler, 1870). Culture consists of patterns, explicit and implicit, of and for behaviour acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiment in artefacts.

Essential core of culture consists of traditional (historically derived and selected) ideas and especially their attached values. Culture system may, on the one hand, be considered as product of action or as conditional elements of future action (Kroeber & Kluckhohn, 1952). Culture is a fuzzy set of basic assumptions and values, orientations to life, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and ones interpretations of the 'meaning' of other people's behaviour. Therefore, culture consists of (overall activity of) attitudes, values,

basic assumption, arts, customs, belief and embodiments that shape the behaviour of individuals in a given society.

This is a sociological concept, the definition of which lacks terminological exactitude. This is because of the existence of both symbolic and non-symbolic aspects of culture. For our purpose, however, culture can be defined as the total social heritage, traditions, techniques, values, etc., all of which enable man to acquire a mastery over his environment. It refers to that inherent and acquired intellectual capability, which enables man to maintain the technology for survival. Culture according to Collins (2009) is the ideas customs, and art of a particular society; a particular civilization at a particular period, a developed understanding of the arts and development. Culture is the ideas and standards that people share. This may be in the areas of organization culture, management culture, maintenance culture, work culture, etc. According to Collins model of culture fit postulates that the socio cultural environment affects the internal work culture which is in turn influences Technological Entrepreneurship development practices.

Maintenance Culture

According to Suwaibatul et al. (2012), maintenance culture is the values, way of thinking, behaviour, perception and the underlying assumptions of any person or group or society that considers maintenance as a matter that is important (priority) and practices it in their life. When a person or group has maintenance culture, they would have the attitude to maintain, preserve and protect the public facilities. As Florence (2011) postulated, Maintenance culture is not universal in nature. It is usually derived or learned through a person making maintenance a natural daily practice that can be followed and emulated by others. According to Mark et al. (2006), the concept of maintenance culture is the internal environment between management and staff in ensuring effective maintenance through the sharing of ideas, beliefs and values of each member in an organization. Developing and embracing maintenance culture through effective leadership, sound policy, attitudinal development among others would not only enhance national development but also enlist our country among the comity of developed nations. Maintenance culture in this study suggests the habit of regularly and constantly keeping equipment and machines, facilities infrastructure in good and working condition at all times. According to Stephen (2016) maintenance culture is a hidden hierarchy of people an communication processes that binds an organization

together. In the work book for improving maintenance and rehabilitation through culture change, Stephen (2016) describes the cultural infrastructure as being comprised the hidden day-to-day communication system; passers of sensitive information to those who may or may not need to know; mechanism for conveying what and who is important; and terminology that describes what is done and often how.

When examining maintenance culture, the company values, role models, and the rights and rituals of the organization, must be considered. (Oni 2008)

How to change maintenance culture, according to Islamiah, Abdul-Hakim, Saidin & Awang (2012), changing the behaviour of people trickles down to the reliability of machines. Setting new levels of accountability and new expectations will help to break old habits. From a culture perspective, these are key success factors.

In support of this assertion, Islamiah, Abdul-Hakim, Syazwina & Eizzatul (2012) posited that maintenance culture is the values, way of thinking, behaviour, perception, and the underlying assumptions of any person or group or society that considers maintenance as a matter that is important and practices it in their life. If a nation must develop, it is imperative that installation as well as maintenance of its existing facilities be given priority. This is more so for developing nations like Nigeria where there is a huge gap between the supply and demand for such facilities due to high rate of population growth and other factors (Ankeli, Dabara, Oyediran, Guyimu, & Oladimeji 2015). Nigerian government according to Eti, Ogoji, & Probert (2006), took certain economic steps towards being among the best twenty economies in the world by the year 2020. Attaining sustainable infrastructural development by successive governments and cultivation and practicing maintenance culture are essential in achieving this vision. Infrastructural facilities generally referred to as economic and social overhead capital which includes education, water supply, sewage systems and energy. Others are postal and telecommunication services, transport system.

MAINTENANCE CULTURE IN NIGERIA

Mbamali (2003) had earlier postulated that maintenance culture in Nigeria had been one of the lowest around the world, especially, in our principal towns and cities where the majority of public properties are located. In the rural areas, the story is different and pleasant to hear. The traditional practice of communal clearing of community owned places such as market playground is in almost every village and in private homes. Also, it is customary to refurbish building interiors

with mixtures of cow dung of natural red clay. The end result is attractive and totally indigenous. According to Wahab (1995) the nation accords low priority to property management leading to neglect of public properties. Mbamali (2003) asserted that we have no maintenance policy and therefore no culture exists. Neglect of maintenance has accumulated consequences in rapid increase in the deterioration of the fabric and finishes of a building, accompanied by a harmful effect on the contents occupants Seeley, (1987). Inadequate maintenance culture is a peculiar feature of almost every public building in Nigeria. According to Rotimi and Mtallib (1995) this is partly due to poor maintenance culture on one hand and partly due to the absence of an appropriate benchmark. Gurjit (1990) asserted that lack of proper maintenance culture brings the life of these public buildings last before reaching the total obsolescence state. The declining maintenance culture in Nigeria and its effect on public buildings and all other properties has become a major problem to the government at various levels. This study examines ways of improving maintenance culture and its effect on quality of public properties.

A great portion of a nation wealth is evident in the total value of its public properties and buildings; it is also an important factor in the production of the building to be preserved. A poorly maintained building, equipment and facilities in a decaying environment depresses the quality of live and contributes in some measures to anti-social behaviour which threatens the socio” political environment it finds itself in.

It is common knowledge that the deplorable state of public facilities in Nigeria poses great concern to stakeholders. Facilities at Nigeria’s airports, hospitals, schools, roads etc would give indication that the society lacks an agent that would have helped manage, ensure effective and efficient functioning of the facilities as well as fostering national development. Nahimah (2008), while working on the state of Nigeria aviation industry, opined that the flaws in the Nigeria aviation sector was attributed to lack of maintenance culture and the training of professional engineers. The author further argued that, acquiring aircrafts is not as relevant to the industry as good maintenance of the existing ones, adding that a well maintained aging aircraft is as good as a poorly maintained new aircrafts. This study wholly agrees with the author.

Existing maintenance records as posited by studies carried out by Eti, Ogoji & Probert (2006) and Omotehinshe, Dabara, & Guyimu, (2015) had suggested the deteriorating nature of public facilities in terms of street lights that were erected some years back by the past and present governments that would have served as

means of beautification and illumination in our society, but due to lack of maintenance culture in terms of bulbs replacement or fixing minor fault has turned our roads to death traps and hubs of illicit games, such as arm robbery stations. Contribution of private organizations into national development cannot be over-emphasized in term of facilities construction (industrialization), environment conservation, employment generation and assisting government businesses through prompt payment of taxes. These, opined Nahimah (2008), are achievable when company's operational facilities (machine) are continuously reliable, available and maintainable throughout their installed service years. Eti et al. (2006) opined that a developing society needed to adapt to change and faster creativity. To these authors, the pursuit of continual improvement, implementing wise maintenance schedule are essential for contemporary years. They further argued that challenges in maintenance management among Nigerian industries resulted in low availability of materials, and productivity which eventually could lead into the closure of certain industries. Assets and facilities are essential to an organization's resources, thus improving the working environment and well-being of their maintenance is an important aspect that should be given serious attention. This is where there is need for adequate and constant maintenance awareness for all the members involved in the organization's facility management towards achieving the corporate goal of the firm.

British Standards Institute (1974) considered maintenance as the combination of technical and administrative actions taken to preserve or protect a structure, system or equipment to function properly.

The Collins English Dictionary (2011) defines maintenance as the action or state of being maintained, the process of keeping an object, car, building and good condition etc. Kumar & Suresh (2008) postulated that maintenance is an action taken to prevent a device or component from failing or to repair normal equipment degradation experienced with the operation of the device to keep it in proper working order.

Corrective maintenance: According to Mobley (2004) this is the maintenance carried out after a failure has occurred and intended to restore an item to a state in which it can perform its required function. This maintenance strategy is simple and straightforward, "fix it when it breaks" i.e. the defective items are fixed either after failure or during failure. The corrective technique does not take any maintenance action until failure occurred. This maintenance management philosophy is rarely used together without any preventive tasks, (lubrication and

adjustment). Still, in a corrective environment, the equipment are not rebuilt nor repaired in greater extent until it fails to operate (Mobley, 2004). This enjoyed low cost investment for maintenance and few staff is required.

METHODOLOGY

The study examines the current state of the available technology for effective entrepreneurship development and maintenance culture with a view to identifying appropriate policies and strategies for enhancing and maximizing the utilization of available local resources for technology development in Nigeria. The study adopted survey and documentary analysis research methods.

The research involves collection of data from existing records and finding of views and opinion on the subject through the use of structured questionnaire. The area covered by this study include urban and rural towns and industrial and entrepreneurial places in Lagos, Oyo, Ogun, Ondo, Ekiti and Osun states of Nigeria. Stratified proportional random sampling technique was used to select the respondents for the study.

The instrument was validated and pilot tested to ascertain the internal consistency using Cronbach Alpha. The reliability coefficient of the questionnaire was 0.79 data obtained were analyzed using mean one way analyses of variance percentages and frequency count.

Summary and analysis of finding

Problems

A large proportion of the respondents are of the view that the poor state of science and technological innovations in Nigeria, $\bar{x} = 4.56$ coupled with negative technological responses, $\bar{x} = 4.41$ lack of a coherent national policy guideline that is properly coordinated, $\bar{x} = 4.68$ lack of sound educational system that emphasizes the culture of maintenance with adequate infrastructure, focusing on areas of comparative advantage, $\bar{x} = 4.70$ lack of collaboration between industry and academia, $\bar{x} = 4.65$ among others were indicated as major problem and issues that have hindered effective harnessing of local technology for entrepreneurship development and maintenance culture in Nigeria.

Maintenance Culture

Study analysis reveals that the level of technological awareness, $\bar{x} = 4.59$ high illiteracy and low level of education of operators, $\bar{x} = 4.68$ dearth of technical

personnel together with ineffective planning in the development of equipment maintenance personnel, $\bar{x} = 4.70$ overdependence on imported raw materials and equipment, $\bar{x} = 4.58$ maintenance policy deficiency, $\bar{x} = 4.66$ and the throw away and replace syndrome $\bar{x} = 4.69$ are the antithesis of our maintenance consciousness and among other problems which hinder the development of a maintenance culture in Nigeria. Personnel must have a certain level of technological competence $\bar{x} = 4.92$, be alert to equipment fault signals $\bar{x} = 4.85$.

Harnessing relevant Technology and Maintenance Culture.

The study analysis indicates that the human and organisation dimensions and their implications for human resource development and training are of utmost importance $\bar{x} = 4.71$. The analysis also reflect that the maintenance of capital goods in a technologically backward environment, constitutes a major constraints to the development of a maintenance culture $\bar{x} = 4.75$.

Table 1 Summary of the Analysis of Variances of the Responses of participants the Entrepreneurs, Maintenance Engineers, Supervisors and Industrial workers.

Sources of variance	SS	df	MS	F	level of Significance	Remark
Between groups	0.003	2	0.0015	0.052	0.05	NS
Within groups	2.991	105	0.0284			
Total	2.994	107				

Data in Table 1 shows the results of the analysis of variance (ANOVA) summary on data regarding the problems, challenges, constrains and prospects of the current state of the available technology for effective entrepreneurship development and maintenance culture. The data shows that there is no significant difference between the test score results of the respondents on the tested study area with an F. Ratio of 0.05. Since our calculated F-Ratio is less than the table value of 3.09, the null hypothesis is retained.

Discussions and Interpretation

The study analysis provides a broad spectrum and clear indications of great requirements for real investigation on the abject state of Nigeria Entrepreneurial infrastructural facilities, machinery and equipment as well as the need for

investigations/findings on the motive/reasons for the absence of effective maintenance culture and the “use and dump” mentality of Nigerians together with the inability as a nation to fully understand and appreciate the meaning of and essence of true or real entrepreneurial development. Harnessing effective local Technology Entrepreneurship development would do as part of our conditions of acquiring the ability and vision to see clearly what we ought to do as part of our contribution in helping to create an environment that sustains a permanent maintenance culture, Universities everywhere particularly with technologically developed programmes should incorporate maintenance structure and activities into the school curriculum.

The study is of the view that the maintenance of capital goods in a technologically backward environment, constitutes a major constraint to the development of a maintenance culture. This is because, a largely illiterate population lacks the level of technological consciousness necessary to sensitize them to scientific understanding. This situation explains why a lorry driver overloads his vehicle beyond its capacity.

The design of an equipment is always meant for a specific purpose. Such equipment is also expected to be used under specific conditions.

Unfortunately however, because most of the equipment used in Nigeria are imported, it is most difficult to keep to the designer’s specifications either in terms of use or environmental prescriptions. Lack of spare parts due to frequent changes in technology and design in the countries of manufacture means that, a piece of equipment cannot be used for a long time by the importer in a developing economy. These three factors, which reduce the maintainability of imported equipment, also constitute a bottleneck to the development of maintenance expertise.

Human and Organisational Problems: The development of a maintenance culture presupposes that, personnel must have a certain level of technological competence; they must also be alert to equipment fault signals. But generally, the knowledge and skills acquired by most staff are not adaptable, particularly, if the technician who is trained in a technologically advanced country is faced with the realities of the African environment. Those who are trained logically could also become unfit for their tasks if they are to handle machines and equipment, the design of which they know nothing about.

This study considers maintenance as a process of preserving an asset or facility in its state of continuous use and function above a minimum acceptable level of performance, over its design span life.

Organisations undertake efforts to reduce costs and at the same time improve quality and productivity. These efforts include an examination of the maintenance requirements. The production system of any Organisation requires effective maintenance attention necessary for its continuous functioning, Omotehinshe, et al., (2015) earlier argument. This will prolong equipment life, availability and retains its proper working condition. Poorly maintained equipment may conversely lead to more frequent failure of the equipment, low utilization rate and delaying of production schedule. Facilities and equipment that are malfunctioning or misaligned may cause higher scrap rate or produce product with a questionable quality.

CONCLUSION

The study has made efforts to examine the fundamental issues responsible for hindering effective harnessing of local technology for effective entrepreneurship development and maintenance culture in Nigeria.

It is clear that a thorough adherence to a well-defined and developed maintenance strategy as a well prepared policy will take care of facility breakdown or malfunction thereby allowing facility managers to concentrate on capitalization (Omotehinshe, et al., 2015; Akinyemi, Gambo, Ankeli & Dabara, 2016). In the absence of this, measurable time will be required to develop and define a maintenance strategy, communicate it, and least focusing on the tactical choice, for how to achieve it.

Tactics are the actual activation needed to implement the strategy, which concerns the management of processes, people, and physical asset infrastructure (Campbell & Reyes-Picknell, 2006). The management's objectives must be realized in accordance with safety, environmental regulations and also in a cost effective way. The integration of machines, men, methods and means into a well-designed strategy requires indispensable managerial capacity (Waeyenberghad & Pintelon, 2002).

For effective maintenance therefore, personnel should be able to diagnose system faults, analyze them, take decisions, act appropriately and promptly. The Nigerian situation invariably cannot be likened to this. Often, the system technician/engineer and analyst is incapacitated because of bureaucratic

impediments that characterise most organisations. For example, the locus of decision-making power, the officialdom that shrouds the release of resources, etc. explains part of the problems of erratic power and water supply in most towns and cities.

Excessive politicisation of highly technical decisions also implies that, it is possible to purchase scrap equipment whose maintainability could subsequently become a nightmare.

RECOMMENDATION

In the context of the study, the first area of concern is how to educate and train entrepreneurs and Nigeria manpower in general in order to overcome the personnel-related problems of maintenance. The second concern is how to evolve organizational arrangements in entrepreneurship to facilitate the socialization of personnel into a maintenance culture.

In this connection, formal education especially for entrepreneurs for maintenance should be seen as encompassing four levels of manpower and expertise, with the engineers at the apex of a pyramidal structure and the craftsman as the indispensable base which, in fact, supports the whole structure that sustaining a permanent maintenance culture, universities everywhere particularly with the technologically developed programmes should incorporate maintenance structure and activities into the school curriculum.

A major concern and argument of this study is that real entrepreneurship development and maintenance culture must be essentially and deeply rooted in the people and the policy of government.

It is been suggested that as much as possible, it should be the policy of government to ensure that, a very large proportion of the equipment and machines used in the country's small-scale industrial sub-sector are designed and fabricated locally. Most of those that are being produced locally, do not have any maintenance manuals. The reason for this is that, many of the fabricators evolved as apprentices with little formal education under master craftsmen. It should be possible for the Ministry of Science and Technology to organize exhibitions of these simple tools, where the Scientists can have dialogue with the semi-literate fabricator. Such dialogue could lead to the production of simple maintenance manuals.

Spare parts: Unless a foreign equipment designer can guarantee the supply of spare parts (particularly by establishing appropriate workshops locally), it should

be government policy to discourage the importation of such equipment. The local production of spare parts would not only ensure the maintainability of equipment, but such a factory would enhance the ingenuity and creativity of local Entrepreneurs and personnel. What is more, it would help to solve part of the problem of mass unemployment.

The issue of maintenance or keeping the means of labour created in good repair, or working order is very crucial. We must devise maintenance strategies that transcend preventive and routine maintenance to the actual maintenance of the tools and machinery used by labour.

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