

**ENTREPRENEURIAL COMPETENCIES REQUIRED BY TECHNICAL  
COLLEGE REFRIGERATION AND AIR - CONDITIONING GRADUATES FOR  
ESTABLISHING SMALL AND MEDIUM SCALE ENTERPRISES IN FEDERAL  
CAPITAL TERRITORY**

**By**

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PG/M.ED/09/50563**

**DEPARTMENT OF VOCATIONAL TEACHER EDUCATION  
(INDUSTRIAL TECHNICAL EDUCATION)  
UNIVERSITY OF NIGERIA, NSUKKA.**

**SUPERVISOR: DR (MRS) OGBUANYA, T. C.**

**FEBRUARY, 2012.**

**TITLE PAGE**

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## **APPROVAL PAGE**

This Project has been approved for the Department of Vocational Teacher Education, University of Nigeria, Nsukka.

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## **CERTIFICATION**

ILIYA, ESTHER, a Post graduate student in the Department of Vocational Teacher Education with Registration Number PG/M.ED/09/50563 has satisfactorily completed the requirements for masters Degree (M.ED) IN INDUSTRIAL TECHNICAL EDUCATION (ELECTRICAL/ELECTRONICS). The work embodied in this thesis is original and has not been submitted in Part or in full for any other diploma or degree of this or any other University.

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SUPERVISOR

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STUDENT

## **DEDICATION**

This work is dedication to late Evangelist Audu Girja.

## **ACKNOWLEDGMENTS**

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## ABSTRACT

This study was designed to identify the Entrepreneurial Competencies Required by Technical College Refrigeration and Air Conditioning Graduates in the area of Technical, General Personal Attributes, Financial, Marketing and Managerial Competencies for establishing small and Medium Scale Enterprises in Federal Capital Territory. The study sought answers to five research questions and tested five null hypotheses. The population of the study consisted of 97 comprising teachers/instructors of refrigeration and air - conditioning for one Technical College, one Vocational Centre in Federal Capital Territory and craftsmen/technicians of Small and Medium Scale Enterprises. No sampling was carried out since the population was of manageable size. The instrument was validated by three experts and Cronbach Alpha Reliability Coefficient was used to determine the internal consistency of the instrument. The instrument yielded a reliability Coefficient of 0.96. Mean statistic and Standard Deviation were used to answer the five research questions while the five null hypotheses were tested using t ó test at 0.05 level of Significance. The major findings of the study were that: Technical College Refrigeration and Air - Conditioning Graduates Required twenty technical competencies, seventeen general personal attributes competencies, eleven financial competencies, twelve marketing competencies and twenty one managerial competencies for establishing Small and Medium Scale Enterprises in Federal Capital Territory. It was recommended that the identified competencies should be in cooperated into the curriculum of Technical Colleges. It was also recommended that Federal Ministry of Education, States, Government Agencies and administrators of Technical Colleges should supply instructional materials/equipment and organize Seminar, workshop and in-service training for teachers/instructors of refrigeration and air - conditioning so as to enable them effectively teach the required competencies to students.

# CHAPTER 1

## INTRODUCTION

### **Background of the Study**

Refrigeration and air conditioning is one of the Technical College trade that offer entrepreneurial opportunity to craftsmen/technicians. Whitman, Johnson, and Tomczyk (2005) defined refrigeration as the process of removing heat from a place where it is not wanted and transferring that heat to a place where it makes little or no difference. According to Wikipedia (2011) refrigeration is a process in which work is done to move heat from one location to another. This work is traditionally done mechanically or electromechanically. Whitman, Johnson, and Tomczyk (2005) defined air- conditioning as a process that maintains comfortable conditions in a defined area or equipment that conditions air by cleaning, cooling, heating, humidifying, and dehumidifying. Therefore refrigeration and air conditioning is the process of transferring heat by mechanical or electromechanical principle from one point to the other for the purpose of food preservation and maintaining comfort condition in a define area.

According to Khurmi and Gupta (2008) over the span of last few decades, refrigeration industry has grown in to full- fledged industry in the developed and under developed countries. Refrigeration and air- conditioning has brought much comfort to human beings than any other device of human comfort. The application of refrigeration can be classified in to six categories; domestic, commercial, industrial, marine, air- conditioning and food preservation. To produce Craftsmen/Technicians for designing,

constructing, sells, installation, servicing, and repair of refrigeration and air conditioning equipment, the Federal Ministry of Education FME (2004) included refrigeration as a trade to be taught in Technical Colleges.

Technical Colleges are formal institutions where an individual acquire skills, attitude and scientific knowledge. Okorie (2005) stated that Technical Colleges in Nigeria are established to prepare individuals to acquire practical skills and basic scientific knowledge. However, Nwachuku, Bakare and Adjika (2009) stated that Technical College provide students through training with the relevant and adequate knowledge, skills and attitude for employment under the guidance of a teacher in a related occupation. Technical Colleges are institutions that are equipped with instructional materials/equipment in various fields of occupation to provide skills, knowledge and attitude necessary for employment in specific occupation under the guidance of a train teacher in a related occupation.

Technical College refrigeration and air conditioning graduates need adequate competencies to broaden their employment opportunities. Igbo (2004) in Anyakoha (2009) stated that Nigerian's future prosperity is a function of producing youths who are well prepared and well equipped to take their place in tomorrow's society. Igbo further observed that the government has to implement educational system that will equip youths and adults with saleable skills which can enable them become gainfully employed or self employed. Such educational system should provide for entrepreneurship education, geared towards the production of potential entrepreneur.

The word 'entrepreneur' according to Kuratko (2009) is derived from the French word 'entreprendre', meaning 'to undertake'. The entrepreneur is one who undertakes to organize, manage and assume the risks of a business. An entrepreneur is an innovator or developer who recognizes and seizes opportunities, converts those opportunities into a workable/marketable idea, adds value through time, effort, money, or skills; assume the risks of the competitive market place to implement these ideas, and realizes the rewards from these efforts. Kuratko further stated that an entrepreneur is the aggressive catalyst for change in the world of business, an independent thinker who dares to be different amid a background of common event. However, Stokes, Wilson, and Mador (2010) stated that entrepreneurs are those persons (business owners) who seek to generate value through the creation or expansion of economy activity, by identifying and exploiting new products, processes or market. Stokes, Wilson, and Mador further stated that entrepreneurs display particular behaviours, skills, attributes and competencies, which mark them out from other types of individuals. Therefore, for Technical College refrigeration and air conditioning graduates to distinguish themselves from other types of individual and be well equipped to establish SMEs, they need to acquire entrepreneurship education.

Entrepreneurship according to Hisrich and Peter (2005) is the process of creating something new, with value and devoting the necessary time and effort assuming the accompanying financial psychic and social risks, receiving the resulting reward of monetary or personal satisfaction and independence. Anyakoha (2009) define



entrepreneurship education as the process of acquiring the knowledge, attitudes and skills of entrepreneurship. Anyakoha further stated that such education should be able to produce self-reliant, job creators and not job seekers. Entrepreneurship education should be able to equip individual for creative problem solving and innovation. Entrepreneurship has a lot of benefits both for the entrepreneurs and the society in which these businesses are carried out. Some of these benefits include; opportunity to get control, offer a chance to make a difference, help people work to their full potential, reap high profits and offers a chance to pursue their interests (<http://benefitof.net/benefits-of-entrepreneurship>). Therefore, entrepreneurship is the process of organizing, managing, and assuming the risks of business.

For Technical College refrigeration and air conditioning graduates to attain full potentials of entrepreneurship in their occupation, the graduates need adequate practical competencies. Ihekwoaha (2007) identified the acquisitions of practical competencies in Vocational-Technical Education as a means of becoming an entrepreneur, and owning small and medium business enterprise. For an entrepreneur to be successful, he/she should possess the following characteristics according to Aminu (2009): determination, leadership quality, creativity, self-nurturing, self-discipline, energetic, and future oriented. If the characteristics are strictly adhered to, it will lead to a number of benefits as enumerated by Stokes, Wilson and Mador (2010) which includes self-employment, employment for others, income generation, development of new markets, ability to have great accomplishment, healthy competition, thus encourage higher quality products of the

available small and medium enterprises in refrigeration and air- conditioning when the craftsmen/ technicians are competent.

Competency is a standardize skill or set of skills for an individual to properly perform a specific job. Encarta dictionary (2009) describe competency as ability to do something well, measured against a standard, especially ability acquired through experience or training. According to Olaitan (2003) to be competent means that the individual has acquired the knowledge, skills, attitude and judgment which are required in order to perform successfully at a specified proficiency level in a given work. Competency comprises knowledge, skills, novelty and experience needed to perform a particular job or series of jobs. Ely (1989) in Enete, Amusa, and Eze (2009) viewed competencies as essential knowledge and skills obtainable in a profession and those which the professionals in the field must possess and be able to demonstrate at optimal level of acquisition and functioning. The acquisition of competencies involve formation of relevant habits, which is usually preceded with relevant knowledge which facilitate correct thinking, leading to correct way of doing things. Therefore entrepreneurial competencies in the context of this study is regarded as the knowledge, skills, and attitudes acquired by Technical College graduates of refrigeration and air ó conditioning to identify business opportunities, stimulate creativity and transforming idea into practical and economic activities for maximum output in refrigeration and air ó conditioning works.

To achieve this transformation, the entrepreneurial competencies required by Technical College refrigeration and air ó conditioning graduates need to be identified. These will better equip the graduates for employment and also enhance positive economic benefits at the long run. Hisrich and Peters (2002) identified managerial, technical, financial, marketing and general personal attributes competencies for establishing small and medium scale enterprises. Entrepreneurial competencies therefore refer to the sufficient knowledge, novelty and skills required towards enhancing successful performance in enterprises for self- reliant.

Technical competencies involve possessing knowledge of instruments and the functioning of tools, machines, and mastering of tasks of work. Technical competencies pertain to specific bodies of knowledge and skills required. It includes the abilities to use the procedures, techniques and knowledge of a specialized field (<http://www.humanresources.hrvinet.com/types-of-competency>). Whitman, Johnson, and Tomczyk (2005) outlined technical competencies in refrigeration and air ó conditioning as: work place behaviours, technical skills and the general body of knowledge. Technical competencies therefore are the ability of having theoretical and practical knowledge, attitude and skills on principles and practice of refrigeration and air - conditioning works.

Personal attributes are competencies that relate to inherent personal characteristics such as; motives, self image, self concept, and potentially affect work attitude and performance. (<http://www.humanresources.hrvinet.com/types-of-competency>). Kuratko (2009) outlined personal attributes competencies as; confidence, determination,

creativity, initiative, intelligence, positive respond to challenges, courage, foresight, honesty, perseverance and integrity. Personal attributes are competencies that are in built or developed in man to perform certain task.

Financial competence is defined as having the skill, knowledge, and ability to perform activities with a financial impact in compliance with relevant occupation. According to Ihekwoaba (2007) are similar to management, but it lays emphasis on financial resources, money, cheques, postal orders, money order, letters of credit, bonds, shares. Anyakoha (2009) outlined Financial competencies as knowledge of; accounts, costing, factors involved in decision to grant loan by financial houses and ability to understand pay roll and various deductions, interpret financial statement and acquire the skill of preparing financial statement.

Marketing is the business activity of presenting products or services in such a way as to make the products or business desirable. Anyakoha (2009) outlined marketing competencies as determine and interpret factors which indicate extent and strength of competition, and determine what customers need, ability to determine price, advertising, identification of target market and customer, identify channel of distribution and be aggressive towards profit making.

Managerial competencies relate to skills needed to perform managerial work and process. Managerial Competence is the ability of managers and leaders to direct work streams and define outcomes clearly (<http://www.uclouvain.be/en-206332.html>). Olabiyi, Keshinro, Oluwa and Bashorun (2009) outlined some managerial competencies

required of Technical College graduates to include: foster relationship among organization staff, create an open door policy, create long term vision for the organization, and develop interest and implement policies. Managerial competencies therefore are the ability of getting things done through people or process of achieving an organization's goal.

With the acquisition of entrepreneurial competencies, Denga (2002) observed that individuals can be engaged in self-employment and other useful projects such as the establishment of SMEs, thus reducing the present high rate of un-employment. Small and Medium scale Enterprise according to Datol, Danwanzam, Nyapsen, Padung, Udo, Bentu and Okwori (2004) is a form of business organization which is usually set up by entrepreneurs who shall provide all the needed capital, take decisions as well as shoulder the responsibility for the management and administration of the business. Datol, Danwanzam, Nyapsen, Padung, Udo, Bentu and Okwori further stated that the capital needed for SME is usually not more than one (N1m) million Naira, excluding land premises. SMEs in the context of this study are enterprises with minimum assets base between one hundred thousand and five hundred thousand Naira, excluding land and working capital with a minimum of three and maximum of eighteen number of employee. SMEs occupy a place of pride in virtually every country or state. Due to the SMEs significant role in the development and growth of various economies, SMEs have been referred to as the engine of growth and catalysts for socio-economic transformation of any country. SMEs represent a veritable vehicle for the achievement of national economic objectives of employment generation and poverty reduction at low investment

cost as well as the development of entrepreneurial capabilities. Therefore, it is necessary to identify the entrepreneurial competencies required for graduates of Technical Colleges in the Federal Capital Territory (FCT) in refrigeration and air ó conditioning which they can use to set up SMEs and be self ó reliant and relevant in the society thus reducing unemployment in the FCT.

### **Statement of the Problem**

The problem of unemployment among graduates of Technical Colleges in general and refrigeration and air ó conditioning in particular as well as doubts often entertained on whether these graduates possess adequate and relevant skills required for gainful employment, have stressed the need to examine and improve on the effectiveness of Technical College curriculum and personnel to be able to respond to the students employability needs and the labour market requirement. In order to ensure that technical institutions serve the purpose for which they are designed, the Federal Government established the National Board for Technical Education (NBTE), and Industrial Training Fund (ITF) to ensure among other things, improvement on the standards, quality and quantity of skilled personnel at all levels of the nation's technological and economic human resources needs thereby reducing poverty and unemployment rate.

Despite the government's attempt in providing quality and quantity of skilled personnel for technological advancement, establishment of SMEs by Technical College refrigeration and air ó conditioning graduates appear not to be impressive in FCT. Most of these graduates are found roaming the streets, and those who are self employed, do not

perform well due to lack of certain competencies. Okoli (2009) observed that most of these students are graduating from Technical Colleges without the necessary skills and entrepreneurial competencies. Okoli further stated that many of these graduates do not possess entrepreneurial skills that will enable them establish and manage small business enterprise so as to become self employed and self-reliant on graduation. Furthermore, Nwosu in Akinseinde (2010) stated that at present, Nigeria is experiencing the social consequences of not providing adequate Vocational Technical Education to the youths. The current increase in social problem of armed robbery, ritualism, pick pockets, house breaking, car snatching, human trafficking, attacks on individuals and nation's source of income/wealth may be caused by high rate of unemployment among the youths. Therefore, to ensure that the youths in general and Technical College refrigeration and air conditioning graduates in particular are properly engaged in the economic development of the nation, there is need to acquire entrepreneurial competencies before graduation. Acquiring these entrepreneurial competencies will assist those of them whose interest lie in the establishment of SMEs to compete favourably in the overcrowded markets all over Nigeria in general and FCT in particular.

Lack of entrepreneurial competencies by Technical College graduates as pointed by Olabiyi, Keshino, Oluwa and Bashorun (2009) has resulted to a situation whereby most of the graduates hope solely on paid employment which is not forthcoming; whereas, they could establish and manage SMEs if they possessed the entrepreneurial competencies needed to perform their jobs effectively. The Technical College graduates

of refrigeration and air ó conditioning are not left out of this problem. To bridge the gap between unemployment among graduates of refrigeration and air ó conditioning, there is need to identity the appropriate entrepreneurial competencies required hence this study.

### **Purpose of the Study**

The purpose of this study is to determine the entrepreneurial competencies required by Technical College refrigeration and air conditioning graduates for establishing small and medium scale enterprises in Federal Capital Territory. Specifically, the study determined the:

1. Technical competencies required by Technical College Refrigeration and Air - conditioning graduates for establishing small and medium scale enterprises.
2. General personal attributes required by Technical College Refrigeration and Air - conditioning graduates for the establishment of small and medium scale enterprises
3. Financial competencies required by Technical College Refrigeration and Air - conditioning graduates for the establishment of small and medium scale enterprises.
4. Marketing competencies required by Technical College Refrigeration and Air - conditioning graduates for the establishment of small and medium scale enterprises.
5. Managerial competencies required by Technical College Refrigeration and Air conditioning graduates for establishing small and medium scale enterprises.



## **Significance of the Study**

The findings of the study would benefit the Federal Capital Territory Administration and Agency of Science and Technology Abuja, National Board for Technical Education (NBTE), National Business and Technical Examination Board (NABTEB), Federal and State Ministries of Education, Vocational and Technical Education, Parents and Society, Teachers, Students and Researchers. Findings of the study of entrepreneurial competencies required by Technical College refrigeration and air conditioning graduates are expected to be of benefit to Federal Capital Territory Administration and Agency of Science and Technology Abuja, by serving as a reference material to the agency during procurement of instructional materials, inspection and supervision by ensuring and insisting that those identified competencies are taught. By so doing, the students will be equipped with competencies for establishing small and medium scale enterprises after graduation.

The National Board for Technical Education (NBTE) as a quality control body could use the findings from this study to in cooperate suitable programmes/modules that can enhance entrepreneurial competencies of graduates of refrigeration and air conditioning to enable them to establish SMEs. Findings of the study would be of importance to NABTEB as an examining body to in cooperate those areas that required acquisition of competencies in their examination questions especially those aspects of technical and managerial competencies for entrepreneurial ventures which will make the graduates saleable in the field of refrigeration and air - conditioning .

The findings from the study could be used by the Federal Ministry of Education and Federal Capital Territory Administration in particular, as a guide on the type of directives in terms of modules required to train youth in skill acquisition centers administrators for unemployed youths for jobs in refrigeration and air - conditioning enterprises. The findings could be useful to the ministry as a reference material during refresher courses for teachers of refrigeration and air - conditioning. The study would be of benefit to Vocational and Technical Education by adding value, creativity and new innovation to graduates at long run.

The findings of the study would be of importance to parents, it will serve as reference materials to parents on how to support their wards morally and financially towards establishing SMEs where the graduates will contribute to the income of the family. The society will stand to benefit from the competent services rendered by the Technical College refrigeration and air - conditioning graduates thus reducing unemployment. The findings of the study would be of benefit to refrigeration and air conditioning teachers on the entrepreneurship competencies required by refrigeration and air conditioning students. It will serve as a reference material to the teachers on the competencies they would require for teaching refrigeration and air - conditioning concepts and the competencies needed for gainful employment into refrigeration and air - conditioning enterprises respectively. The findings could also serve as a source of reference material to researchers.

Finally the result of the study if adopted will be of benefit to the Technical College refrigeration and air- conditioning students. If the entrepreneurial competencies are identity and included in the curriculum, it will help students to acquire the necessary entrepreneurial competencies that are needed for establishing small and medium scale enterprises before graduation. It will also help in removing entrepreneurship phobia and increase their chances of trying out self employment.

### **Research Questions**

The study seeks to answer the following research questions.

1. What are the technical competencies required by Technical College Refrigeration and Air -conditioning graduates for the establishment of small and medium scale enterprises?
2. What are the general personal attributes required by Technical College Refrigeration and Air - conditioning graduates for the establishment of small and medium scale enterprises?
3. What are the financial competencies required by Technical College Refrigeration and Air - conditioning graduates for the establishment of small and medium scale enterprises?

4. What are the marketing competencies required by Technical College Refrigeration and Air - conditioning graduates for the establishment of small and medium scale enterprises?
5. What are the managerial competencies required by Technical College Refrigeration and Air - conditioning graduates for establishing small and medium scale enterprises?

### **Hypotheses**

Five null hypotheses were formulated to guide the study and will be tested at 0.05 level of significance.

H<sub>01</sub>: There is no significant difference between the mean responses of teachers/instructors of refrigeration and air - conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on technical competencies of Technical College refrigeration and air - conditioning graduates for establishing small and medium scale enterprise.

H<sub>02</sub>: There is no significant difference between the mean responses of teachers/instructors of refrigeration and air - conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on the general personal attributes required by Technical College refrigeration and air conditioning graduates for establishing small and medium scale enterprises.

H<sub>03</sub>: There is no significant difference between the mean responses of teachers/instructors of refrigeration and air - conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on the financial competencies required by Technical College refrigeration and air - conditioning graduates for establishing small and medium scale enterprises.

H<sub>04</sub>: There is no significant difference between the mean responses of teachers/instructors of refrigeration and air - conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on the marketing competencies required by Technical College refrigeration and air - conditioning graduates for establishing small and medium scale enterprises.

H<sub>05</sub>: There is no significant difference between the mean responses of teachers/instructors of Refrigeration and air - conditioning and refrigeration and air conditioning craftsmen/technicians of small and medium scale enterprises on managerial competencies of Technical College refrigeration and air conditioning graduates towards the establishment of small and medium scale enterprises.

### **Delimitation of the Study**

Entrepreneurial competencies are very wide as a result of that, the researcher has limited the study to only five aspects of entrepreneurial competencies required by Technical College refrigeration and air conditioning graduates for establishing small and medium scale enterprises namely: technical, general personal attributes, financial,

marketing, and managerial. The study will involve teachers/instructors of refrigeration and air - conditioning in one Technical College, one Vocational Center and some refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises in the FCT.

## **CHAPTER 11**

## **REVIEW OF RELATED LITERATURE**

The review of related literature for this study is presented under the following sub-headings:

### **Conceptual Framework**

- Entrepreneur, Entrepreneurship, Entrepreneurship Education
- Competencies
- Entrepreneurial Competencies.
- Technical Competencies
- General Personal Attributes Competencies
- Financial Competencies
- Marketing Competencies
- Managerial Competencies
- Technical College
- Technical College Refrigeration and Air ó Conditioning Graduates
- Small and Medium Scale Enterprise

### **Theoretical Framework**

- Theory of Reasoned Action (TRA)
- Cognitive Load Theory (CLT)
- Theory Y
- Needs Theory

### **Review of Related Empirical Studies**

## Summary of Review of Related Literature

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### Conceptual Framework

Concept is an idea or principle that is connected with something. Anyakoha (2009) define concept as an idea, thought or devolution of abstract system of thoughts, by which science investigates, interprets and understands particular segments of reality of phenomena. Anyakoha further stated that concept is a construct and constructs are theoretical creation. Eboh (2009) stated that concept is an idea of thought or devolution of abstract system of thoughts by which science investigates, interprets and understands particular segments of reality or phenomena. Eboh further explain that concept is a construct and constructs are theoretical creations. Eboh concluded that concept is a logical construct derived from sense impressions, percepts (theory) and experiences (empirical). Concept is the distinctive meaning of a term, that is, whatever is meant by a word or phrase.

Conceptual framework is the organization of the relationship of the mechanism of research problem upon which literature would be reviewed. According to Anyakoha (2009) conceptual framework is a schematic description and illustration of the causative mechanisms and relationship deducable from the research problem. Wikipedia (2011) stated that, conceptual framework used in research as outline possible courses of action or to present a preferred approach to an idea or thought. Conceptual frameworks can act like maps that give coherence to empirical inquiry. Because conceptual frameworks are potentially so close to empirical inquiry, they take different forms depending upon the



research question or problem. However, conceptual framework, as used in the context of this study involves the explanation of the terminologies used for the purpose of the study. The concepts in this study include: Entrepreneur, Entrepreneurship, Entrepreneurship education, Competencies, Entrepreneurial competencies, Technical College, Refrigeration and Air ó Conditioning Graduates, and Small and Medium scale Enterprises. These concepts will be explained one after the other in order to give meaning to the study as follows:

### **Entrepreneur**

An entrepreneur according to Datol et al (2004) is òone who undertakes tasksö. A task is usually a duty that must be done not minding whether it is difficult or not. He/she is a risk taker who likes to take an adventure into the unknown and unfamiliar territories, which with determination and courage wishes to explore and conquer. An entrepreneur is a person of very high aptitude who pioneers change, possessing characteristics found in only a very small fraction of the population. On the other extreme of definitions, anyone who wants to work for him or herself is considered to be an entrepreneur. Igbo (2006) define entrepreneur as one who starts or organizes a commercial enterprise. Oreh (2006) stated that entrepreneurs are builders, creators, inventors, managers and leaders all at the same time. However, Ekumankama, and Ukah (2010) asserted that an entrepreneur is a person who organizes, and manages his or her own business. Ekumakama, and Ukah further stated that an entrepreneur can also be seen as a person that can start his or her own business or assumes the risk and management of an enterprise. Okere, and Onyechi

(2010) saw entrepreneur as one who starts or organizes a commercial enterprise. Therefore, an entrepreneur in the context of this study is someone who takes the initiative to establish his own business from scratch and nurtures it to growth and profitability, brings new ideas or innovations into it so that he makes it better.

An entrepreneur is a person of very high aptitude who pioneers change, possessing characteristics are found in only small fraction of a population. NCGE, (2008) in Stokes, Wilson, and Mador (2010) outline key values associated with the entrepreneur as: Strong sense of independence, distrust of bureaucracy and its values, self- made/self- belief, strong sense of ownership, belief that rewards come with own effort, hard work brings its rewards, belief can make things happen, strong action orientation, belief in informal arrangements, strong belief in the value of knowhow and trust, strong belief in freedom to take action, and belief in the individual and community not the state.

### **Types of Entrepreneur**

According to Osuala (2009) whatever business one does for a living can be considered as self employment or an entrepreneurship. That is to say that entrepreneurship abounds in all spheres of human endeavour; electrical engineering trades, building trades, leader works, and business trades. Osuala further outlined types of entrepreneurs as:

- *Mining and agriculture occupation-* Business in this occupation are mainly on the production of raw materials either by extraction or basic production business in

mining and that connected with producing, preparing and selling farm products belonging to this occupation. Therefore entrepreneurs in quarry business, pot making, coaoil farming, fishery, piggery, goatry, poultry, cattle rearing, horticulture.

- *Manufacturing (construction occupation)* – Those engaged in this business make or grow crops to be sold or engage in construction works. People are engage in such business as soap makers, bakers, porters, carpenters, furniture makers, upholsters, leader workers and shoe makers, boat builders, printers, architects.
- *Distribution industry-* Distribution has to do with the business of moving products from their points of origin to where they will be use or consume. Many activities and institutions are involved in carrying out these functions. Unlike in some other occupation trade are so broad and unlimited. Most entrepreneurs that are involved in the distribution business include the wholesalers, retailers, commissioned agents, insurance brokers, bankers, communication agents.
- *Service occupation-* The service industry is fast growing. Selling of personal services in on the increase as the standard of living of the people is increasing. In service industry there are artistes (musicians, actors, comedians etc) fashion designers, hair dressers, dry cleaners and many others.

Also Wikipedia (2011) classify entrepreneurs in to three groups:

- ❖ *Social entrepreneur:* A social entrepreneur is motivated by a desire to help, improve and transform social, environmental, educational and economic conditions. Key traits and characteristics of highly effective social entrepreneurs include ambition

and a lack of acceptance of the status quo or accepting the world as it is. The social entrepreneur is driven by an emotional desire to address some of the big social and economic conditions in the world, for example, poverty and educational deprivation, rather than by the desire for profit. Social entrepreneurs seek to develop innovative solutions to global problems that can be copied by others to enact change. Social entrepreneurs act within a market aiming to create social value through the improvement of goods and services offered to the community. Their main aim is to help offer a better service improving the community as a whole and are predominately run as nonprofit schemes. Zahra, Gedajlovic, Neubaum, and Shulman (2009) stated that social entrepreneurs make significant and diverse contributions to their communities and societies, adopting business models to offer creative solutions to complex and persistent social problems.

- ❖ *Serial entrepreneur*: A serial entrepreneur is one who continuously comes up with new ideas and starts new businesses. In the media, the serial entrepreneur is represented as possessing a higher propensity for risk, innovation and achievement. Serial entrepreneurs are more likely to experience repeated entrepreneurial success. They are more likely to take risks and recover from business failure.
- ❖ *Lifestyle entrepreneur*: A lifestyle entrepreneur places passion before profit when launching a business in order to combine personal interests and talent with the ability to earn a living. Many entrepreneurs may be primarily motivated by the intention to make their business profitable in order to sell to shareholders. In contrast, a lifestyle entrepreneur intentionally chooses a business model intended to

develop and grow their business in order to make a long-term, sustainable and viable living working in a field where they have a particular interest, passion, talent, knowledge or high degree of expertise. A lifestyle entrepreneur may decide to become self-employed in order to achieve greater personal freedom, more family time and more time working on projects or business goals that inspire them. A lifestyle entrepreneur may combine a hobby with a profession or they may specifically decide not to expand their business in order to remain in control of their venture. Common goals held by the lifestyle entrepreneur include earning a living doing something that they love, earning a living in a way that facilitates self-employment, achieving a good work/life balance and owning a business without shareholders. Many lifestyle entrepreneurs are very dedicated to their business and may work within the creative industries or tourism industry, where a passion before profit approach to entrepreneurship often prevails. While many entrepreneurs may launch their business with a clear exit strategy, a lifestyle entrepreneur may deliberately and consciously choose to keep their venture fully within their own control. Lifestyle entrepreneurship is becoming increasingly popular as technology provides small business owners with the digital platforms needed to reach a large global market.

## **Entrepreneurship**

Entrepreneurship according to Timmons and Spinelli (2004) is a way of thinking, reasoning and acting that is opportunity- based, holistic in approach and leadership

balanced. Entrepreneurship results in the creation, enhancement, realization and renewal of value not just for the owners, but for participants and stake holders. Gana (2006) in Agomuo, and Ibezin (2008) saw entrepreneurship as the willingness and ability of an individual to seek out investment opportunities in an environment and be able to establish and run an enterprise successfully based on the identified opportunity. However, Adisa and Sodique (2008) in Ekumankama, and Ukah (2010) asserted that entrepreneurship thus occurs when an individual develops a new venture, a new approach to an old business or idea, or a unique way of giving the market place a product or service by using resources in a new way under condition of risk. A business might be run from home, office, or a store. Entrepreneurship therefore may focus on retail sales, provides a service or manufacture product. Thus it can be rightly stated that an individual who sets up, organizes, manages, install, services, design, diagnose fault and repair refrigeration and air ó conditioning equipment is an income generating activity. Individual who acquire the knowledge and skill needed for the above activities can be self employed. An entrepreneurship in the context of this study can be regarded as the innovation which can be thought of as a process change comprising identification, evaluation and exploitation of an opportunity, management and creation of value through the successful exploitation of a new idea by an entrepreneur. Entrepreneurship is a vehicle to improve the quality of life for individuals, families, and communities and to sustain a healthy economy and environment. To achieve this individual need an entrepreneurship education.

Entrepreneurship has benefits and limitations. The benefits of entrepreneurship far outweigh the limitations.

### **Benefits of Entrepreneurship**

- ❖ *You can do it part-time.* No one ever said that you have to quit your day job to become an entrepreneur. Many people who are now running their own businesses full time started off working nights and weekends on their dream business. Doing what you love in your free time can even make your day job more tolerable. And once your business is making enough money, you can happily give your two-week notice.
- ❖ *You are the boss.* You make all the decisions. You are in charge of every bit of the business. You don't have to answer to anyone; you don't have to justify a project because the buck stops with you.
- ❖ *You decide your schedule.* When you have your own business, you can set your own hours. No longer do you have to beg your boss to leave early because your child's soccer game starts at 3 p.m. No longer do you have to feel guilty when you're really too sick to work. No longer do you have to use up vacation time and your own sick time to stay home with a sick child. If you want to work out in the middle of the afternoon, you can.
- ❖ *The pride of ownership.* Whether you have a small Internet-based business or are selling artwork from a home studio, having your own business gives you a sense of pride that money cannot buy. Knowing that every success is because of your hard work can be extremely motivating.

- ❖ *Salary Potential.* Generally, people do not want to be “short-changed”; they want to be paid for the amount of work they do in full.
- ❖ *Offers a chance to make a difference,* some people begin and put a lot of effort just to make a difference in society. This has given rise to the concept of social entrepreneurship, which is a recent phenomenon. Such people search for opportunities to serve a cause that is significant to them and try to find pioneering solutions to some of the most pressing and challenging problems of society.
- ❖ *To reap high profit,* reaping high profits by being an entrepreneur is one of the important factors that motivate people to become one and take up all the challenges associated with it. The profits their companies and businesses make play a vital role in any decision made by entrepreneurs. Owning a business or a firm is the best way towards accumulation of wealth.
- ❖ *Helps people work to their full potential,* many entrepreneurs find their work to be extremely enjoyable. They consider their business as an instrument of self-actualization and self-expression. Owning a firm or business acts as a test for the creativity skills, abilities, and determination of an entrepreneur and is taken up as a challenge towards success.
- ❖ *Offers a chance to pursue their interests,* most entrepreneurs don't believe their work to be actual work. Most of them establish businesses closely associated with their interests. As such, there is no particular age for retirement of entrepreneur.  
(<http://benefitof.net/benefits-of-entrepreneurship>).



## Limitations of Entrepreneurship

- ❖ *You are the boss.* Yes, it's also a negative. If things don't work out, if you make a bad decision, if your business fails, you can only blame yourself.
- ❖ *You're taking a risk.* It can be scary to strike out on your own. Sure, it's also exciting, but some people cannot take the stress of being solely responsible for a business's success or failure.
- ❖ *You may end up working longer hours.* Most small business owners work far more than 40 hours per week. And the more successful you become, the more hours you're likely to work. However, if you're doing something you truly love, it really won't matter. (<http://benefitof.net/benefits-of-entrepreneurship>).

## Entrepreneurship Education

Entrepreneurship education is a form of education that is capable of providing the learner with the basic knowledge, skills, attitudes and ideas which will equip the individual for self employment. Entrepreneurship education According to Anyakoha (1997) is programmes which are designed to produce competent and skilled manpower for various sectors of the economy. However, Osuala (2009) asserted that entrepreneurship education is a specialized training given to students of vocational and technical education to acquire the skills, ideas and the managerial abilities and capabilities for self- employment rather than being employed for pay. Igbo (2004)

explain that no nation has ever survived successive high rates of unemployment because of the attendant waste of human resources, which it breeds. However, Ray (1988) in Okoro (2006) stated that entrepreneurship education becomes very imperative for the achievement of national development goals and poverty reduction without emphasis on entrepreneurship education. Akintola (2001) in Osuala (2009) saw entrepreneurial education as a programme or part of programme that prepares individual to undertake the formation and or operation of SMEs which also include franchise operations for the purpose of performing all business functions relating to a product or service with emphasis, given to the social responsibilities, legal requirements and risks for the sake of profit involved in the conduct of a private enterprise.

Therefore, entrepreneurship education is a kind of training given to students to acquire skills, ideas and capabilities to be self employed. Entrepreneurship education is a welcome idea that can improve the wastes of human resources since it exposes the students to thinking, modify and innovate of new things, the brain behind the success of any business.

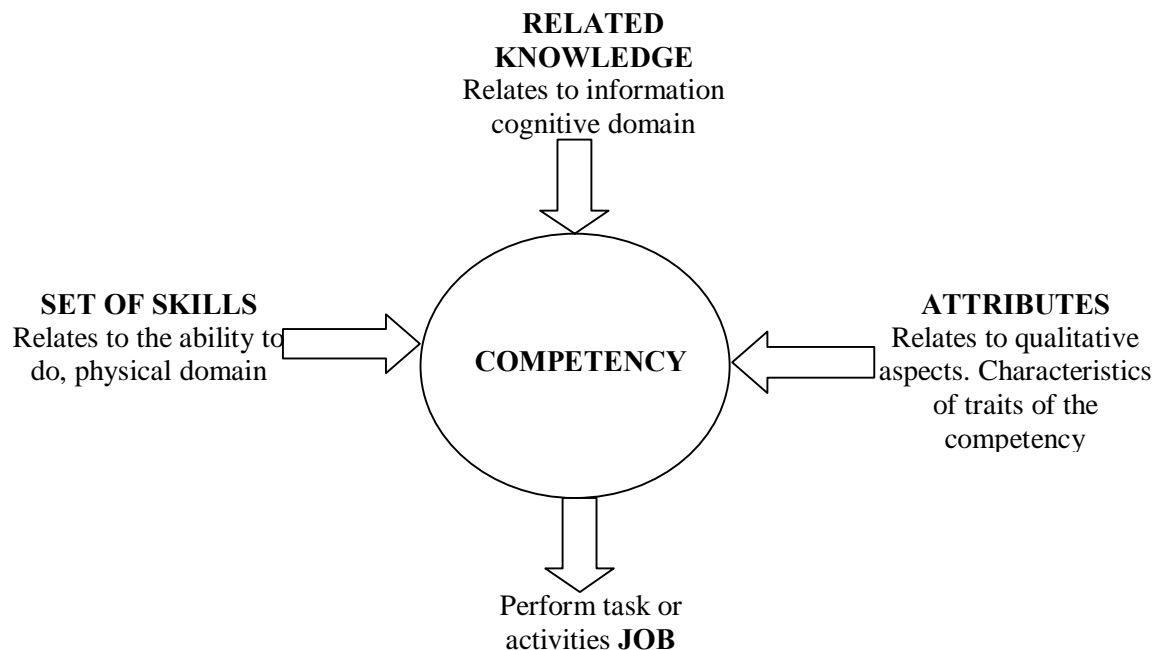
There is no much dissimilarity between entrepreneur and entrepreneurship. Osuala (2009) stated that what appear to be difference between the two concepts is that entrepreneur is describe as a person or the actor, while entrepreneurship is the actions, efforts, abilities, skills, process or sometimes the business unit itself. However, Stokes, Wilson and Mador (2010) distinguished entrepreneurs, entrepreneurial and entrepreneurship as; Entrepreneurs are those persons (business owners) who seek to

generate value through the creation or expansion of economic activity by identifying and exploiting new products, processes or markets. Entrepreneurial activity is the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products processes or markets. Entrepreneurship is the phenomenon associated with entrepreneurial activity. Therefore, entrepreneurship education will produce competent entrepreneur in an occupation.

## Competencies

Competency is the ability to do something well, measured against a standard, especially ability acquired through experience or training. Olaitan, and Ali (1997) stated that competency is the successful performance of a task through the use of knowledge, skills, attitude and judgment.

### Competency graphic display:



(<http://www.unido.org/fileadmin/media/documents/pdf/Employment/UNIDO-CompetencyModel-Part1.pdf>).

Competencies refer to skills or knowledge that leads to superior performance. Achilike and Okwuanaso (2004) competencies are the abilities of powers and authority of skills, knowledge, attitudes that are needed to accomplish task. Olaitan, and Ali (1997) in Olaitan, Asogwa and Omeh (2010) competencies are the successful performance of a task through the use of knowledge, skills, attitude and judgment. Competencies are identified behaviors, knowledge, skills, and abilities that directly and positively impact the success of employees and organizations. Competencies can be objectively measured, enhanced, and improved through coaching and learning opportunities. ([http://jobs.virginia.gov/cd\\_competencies.html](http://jobs.virginia.gov/cd_competencies.html)). Competencies are set of skills, related knowledge and attributes that allow an individual to perform a task or an activity within a specific function or job. (<http://www.unido.org/fileadmin/media/documents/pdf/Employment/UNIDO-CompetencyModel-Part1.pdf>).

Core competencies identify behaviours and skills all employees are expected to demonstrate to carry out the mission and goals of the Laboratory.

- *Initiative and Creativity:* Plans work and carries out tasks without detailed instructions; makes constructive suggestions; prepares for problems or opportunities in advance; undertakes additional responsibilities; responds to situations as they

arise with minimal supervision; creates novel solutions to problems; evaluates new technology as potential solutions to existing problems.

- *Judgment:* Makes sound decisions; bases decisions on fact rather than emotion; analyzes problems skilfully; uses logic to reach solutions.
- *Cooperation/Teamwork:* Works harmoniously with others to get a job done; responds positively to instructions and procedures; able to work well with staff, co-workers, peers and managers; shares critical information with everyone involved in a project; works effectively on projects that cross functional lines; helps to set a tone of cooperation within the work group and across groups; coordinates own work with others; seeks opinions; values working relationships; when appropriate facilitates discussion before decision-making process is complete.
- *Quality of Work:* Maintains high standards despite pressing deadlines; does work right the first time; corrects own errors; regularly produces accurate, thorough, professional work.
- *Reliability:* Personally responsible; completes work in a timely, consistent manner; works hours necessary to complete assigned work; is regularly present and punctual; arrives prepared for work; is committed to doing the best job possible; keeps commitments.
- *Commitment to Safety:* Understands encourages and carries out the principles of integrated safety management; complies with or oversees the compliance with Laboratory safety policies and procedures; completes all required ES&H training; takes personal responsibility for safety.

- *Support of Diversity:* Treats all people with respect; values diverse perspectives; participates in diversity training opportunities; provides a supportive work environment for the multicultural workforce; applies the Labø's philosophy of equal employment opportunity; shows sensitivity to individual differences; treats others fairly without regard to race, sex, colour, religion, or sexual orientation; recognizes differences as opportunities to learn and gain by working together; values and encourages unique skills and talents; seeks and considers diverse perspectives and ideas. ([http://wdrs.fnal.gov/elr/competencies\\_04.pdf](http://wdrs.fnal.gov/elr/competencies_04.pdf))

These descriptions are general and allow for flexibility in how criteria are applied. Competencies should be defined in a way that is appropriate for the expectations of the position and the work environment. Entrepreneurial is often associated with venturesome or creative. That is, when an individual is creative in acquiring the resources needed to build and grow business. If an entrepreneur thinks outside the box he/she will improve the chances of acquiring what is needed to succeed. For an entrepreneur to succeed, he/she required entrepreneurial competencies.

### **Entrepreneurial Competencies**

Entrepreneurial competency is a stage of novelty of an individual in a particular vocation. Achilike and Okwuanaso (2004) in Okoro (2007) define entrepreneurial competencies as the abilities of powers and authority of skills, knowledge, attitudes that are needed to accomplish tasks. Okoro further stated that entrepreneurial competencies comprises of knowledge/know-how required for job occupation; skills in the application

of the knowledge successfully in one's sphere of work in order to accomplish occupational roles. Therefore, entrepreneurial competencies as used in this study are the skills, novelty, and experiences combine to yield proficiency in refrigeration and air - conditioning trade. Entrepreneurial competencies acquired gives the entrepreneur a driven within him/her to identify a particular societal need and then take the risk of using his/her skills and knowledge to create demand and establish small and medium scale enterprise.

Empirical evidence suggests that the competencies for entrepreneurial success are many and varied: however, overall, there are probably ten that appear most regularly:

- *Integrity*: the entrepreneur has a clear sense of values and beliefs that underpin the creative and business decisions that they make; and that influence the actions they take, particularly when in difficult or challenging circumstances.
- *Conceptual Thinking*: the entrepreneur is prepared to use fresh approaches; comes up with crazy ideas that may just work, leading to radical change or significant improvements; and takes time to listen to new ideas without pre-judgement.
- *Risk taking*: the entrepreneur understands that risk taking means trying something new, and possibly better, in the sense of stretching beyond what has been done in the past; and that the constant challenge is to learn how to assess choices responsibly, weighing the possible outcomes against his/her values and responsibilities.

- *Networking*: the entrepreneur understands that networking is a key business activity which can provide access to information, expertise, collaboration and sales; and that careful planning and preparation helps achieve desired results.
- *Strategic Thinking*: the entrepreneur understands and values the planning process, thinking and planning over a significant timescale; recognises external trends and opportunities; and is able to think through any complex implications for the business.
- *Commercial Aptitude*: the entrepreneur keeps up to date with developments in the sector; seeks out best practice; and identifies and seizes opportunities that are not obvious to others.
- *Decisiveness*: the entrepreneur resolves issues as they arise; does not get bogged down in analysis during decision making; and responds flexibly to deal with changing priorities.
- *Optimism*: the entrepreneur persists in pursuing goals despite obstacles and setbacks; operates from hope of success rather than from fear of failure; and sees setbacks as due to manageable circumstance rather than a personal flaw.
- *Customer Sensitivity*: the entrepreneur builds trust and long term relationships with customers; generates an expectation of high level of customer service; and regularly exceeds customer expectation.
- *People Focus*. the entrepreneur creates common purpose with colleagues through shared vision and values; walks the talk; sees and values the best in others; builds



the total capability of the immediate and wider team; and always considers the principles of inclusiveness in planning and dealing with others.

- *Persistence.* Taking repeated actions to overcome the obstacles.  
([http://wiki.answers.com/Q/What\\_are\\_ten\\_competencies\\_of\\_an\\_entrepreneur](http://wiki.answers.com/Q/What_are_ten_competencies_of_an_entrepreneur)).

According to Hisrich and Peters (2002) and Osu (2010) identified technical, human relations, financial/marketing, managerial competencies as essential factors for organizational success.

### **Technical Competencies**

Technical competencies are the ability to do something expertly and well, in accordance to set standard or manufacturers' instruction. Technical competencies according to Martin and Staines (1994) are the ability to use and adopt technical skills including the techniques and tools handling which are relevant to the business. This involves possessing knowledge of instruments and the functioning of tools, machines or research procedure as well as mastery of tasks or content of work. Okeke (2002) stated that to possess' skill is to demonstrate the habit of acting, thinking and behaving in a specific activity in such a way that the process becomes natural to the individual through repetition or practice. Therefore skill development is important in harnessing a nation's natural resources. This is because skill acquisition and its development help in developing and advancing intrinsic potentials in individuals. In line with this, Osuala (2004) asserted that most technical skills training actually present great challenges to the learner by integrating practical work, theoretical knowledge, commonsense, observation

ability and encouragement in an occupation. Technical competencies are specific competencies which are considered essential to perform any job in the organization within a defined technical or functional area of work. (<http://www.unido.org/fileadmin/media/documents/pdf/Employment/UNIDO-CompetencyModel-Part1.pdf>).

According to Whitman, Johnson, and Tomczyk (2005) technical competencies in refrigeration and air conditioning are outline as:

- Core knowledge
- Occupational specification skills and
- Work place behaviour.

Core knowledge include; communication, mathematics and science. Occupational specification skills include; core skills such as safety and environment, electrical principles, electrical motors, controls, refrigeration principles and practice, and air conditioning principles and practice. While occupation specification skill includes; residential and light air conditioning and refrigeration and commercial and light air-conditioning and refrigeration. Work place behaviour includes; ethics, environment, communications, professionalism and problem solving. Furthermore, Whitman, Johnson, and Tomczyk stated that refrigeration technicians are employ to install, service, diagnose fault and repair refrigeration equipment in super markets, restaurants, hotels/motels, and many other types of retail and commercial businesses. Technicians of refrigeration and air conditioning are also responsible for installation, services, diagnose fault and repair

refrigeration equipment of household refrigeration and room air conditioners. These include refrigerators, freezers, and window or through the wall, split units or air conditioning units. To service refrigeration equipment on vehicles, trucks or other large containers hauled by trucks and ships. Whitman, Johnson, and Tomczyk observed that other technicians may design installations or work in the sales area. Sale representatives may be in the field selling to contractors, businesses, or homeowners; others may work in wholesale supply stores or may represent manufacturers, selling equipment to wholesalers and large contractors.

### **Job/Technical Knowledge**

Job-specific competencies are behaviours and skills required of a specific position or work environment: Demonstrates knowledge of techniques, skills, equipment, procedures and materials. Applies knowledge to identify issues and internal problems; works to develop additional technical knowledge and skills.

- *Quantity of Work:* Produces an appropriate quantity of work; does not get bogged down in unnecessary detail; able to manage multiple projects; able to determine project urgency in a meaningful and practical way; organizes and schedules people and tasks.
- *Communication:* Writes and speaks effectively, using conventions proper to the situation; states own opinions clearly and concisely; demonstrates openness and honesty; listens well during meetings and feedback sessions; explains reasoning behind own opinions; asks others for their opinions and feedback; asks questions to

ensure understanding; exercises a professional approach with others using all appropriate tools of communication; uses consideration and tact when offering opinions.

- *Customer Service* ; Listens and responds effectively to customer questions; resolves customer problems to the customer's satisfaction; respects all internal and external customers; uses a team approach when dealing with customers; follows up to evaluate customer satisfaction; measures customer satisfaction effectively; commits to exceeding customer expectations.
- *Problem Solving*: Anticipates problems; sees how a problem and its solution will affect other units; gathers information before making decisions; weighs alternatives against objectives and arrives at reasonable decisions; adapts well to changing priorities, deadlines and directions; works to eliminate all processes which do not add value; is willing to take action, even under pressure, criticism or tight deadlines; takes informed risks; recognizes and accurately evaluates the signs of a problem; analyzes current procedures for possible improvements; notifies supervisor of problems in a timely manner.
- *Attention to Detail*: Is alert in a high-risk environment; follows detailed procedures and ensures accuracy in documentation and data; carefully monitors gauges, instruments or processes; concentrates on routine work details; organizes and maintains a system of records.
- *Flexibility*: Remains open-minded and changes opinions on the basis of new information; performs a wide variety of tasks and changes focus quickly as demands

change; manages transitions from task to task effectively; adapts to varying customer needs.

- *Organization:* Able to manage multiple projects; able to determine project urgency in a practical way; uses goals to guide actions; creates detailed action plans; organizes and schedules people and tasks effectively.
  - *Staff development:* Works to improve the performance of oneself and others by pursuing opportunities for continuous learning/feedback; constructively helps and coaches others in their professional development; exhibits a “can-do” approach and inspires associates to excel; develops a team spirit.
  - *Quality Control:* Establishes high standards and measures; is able to maintain high standards despite pressing deadlines; does work right the first time and inspects work for flaws; tests new methods thoroughly; considers excellence a fundamental priority.
  - *Responsiveness to requests for service:* Responds to requests for service in a timely and thorough manner; does what is necessary to ensure customer satisfaction; prioritizes customer needs; follows up to evaluate customer satisfaction.
  - *Innovation;* Able to challenge conventional practices; adapts established methods for new uses; pursues ongoing system improvement; creates novel solutions to problems; evaluates new technology as potential solutions to existing problems.
- ([http://wdrs.fnal.gov/elr/competencies\\_04.pdf](http://wdrs.fnal.gov/elr/competencies_04.pdf))

The level of education in the technical college has potential to equip persons to the best of their abilities for a comfortable place in the society and the world of work.

According to Uzodinma (1991) it is necessary to note that the role of school in the process of competency development is to provide knowledge and skills that are appropriate and relevant to rapid technological development. However, Elobuiké (1998) stated that an operator of a workshop with adequate competencies will stand the test of time in meeting the desires and expectations of his customers. Therefore technical competencies in the context of this study is the ability to expertly design, install, service or maintain, diagnose fault and repair refrigeration and air - conditioning equipment in accordance to set standard or manufacturers' instruction. Technical competencies in refrigeration and air conditioning are specialized knowledge and ability to perform task in a refrigeration equipment, such as brazing, flaring, swaging, detect leak, refilling of refrigerant, maintenance of evaporator, condenser, and compressor etc in refrigeration and air conditioning equipment.

### **General Personal Attribute**

General personal attribute competencies are ability to work with people and motivate the people so that they will desire good performance, such as encouragement, reward, price, praise, and appreciation. personal attributes of an entrepreneur Ezeji (1993) outlined as; punctuality to work, initiative of a good work judgment, cooperation and dependability, respect of the rights of other workers, and resourcefulness and attention to detail. Amitabh (2009) list out top seven personal competencies of an entrepreneur. An enterprise in the view of an entrepreneur has to have certain cultivated and inherent

qualities in him or her in order to make a success of his or her venture. Not any person can be a successful businessman or woman. Hard work and determination to win have made many successful business people to reach their aspired goals. Personal competencies of a successful businessman or woman:

- *Leadership qualities:* A businessman or woman must be able to lead his or her staff members as well as other associates. He or she must be able to guide others in carrying out business and make a success of it.
- *Decisive:* A successful businessman or woman has to be very decisive. He or she has to take many decisions sometimes on the spur of the moment. Any vacillation in decisions could affect their business. They have to be very firm in their decisions. Also, while taking decisions they must not get influenced by others. They should be able to take decisions independently.
- *Risk-taking:* Business involves many risks, which a business person must not hesitate to take. Lot of financial involvement is there and obviously one has to be careful with investments. Yet risks have to be taken in money matters as well. Sometimes a businessman may lose out on his or her venture, but when he or she make a success of it then he or she has much to gain, both financially and from a personal satisfaction point of view.
- *Confident:* Achieving success in business requires confidence. A businessman or businesswoman has to be sure of him or herself about reaching the set targets of success. Diffidence does not help. Self-image is enhanced, when one is confident.

- *Willingness:* A businessman or woman must be willing to undertake any matters concerning their business venture. He or she must not hesitate for personal or other reasons. Willingness to extend a helping hand is very essential.
- *Enterprising:* One has to be enterprising in order to achieve significant results in business. He or she has to have the zeal to do things. A laid- back approach will not help.
- *Innovative:* New ideas help make a business venture successful. A successful businessman or woman must be innovative and always strive for something better. New concepts must be formulated and new ways of doing business must be thought of.

### **Financial Competencies**

The ability to keep records by refrigeration and air- conditioning technician entrepreneurs would be an advantage in analyzing performances. One of the main reasons in management deficiencies which can cause business to fail is the inability to keep adequate records. Alos (2004) stated that book keeping records; basic accounting practices are the foundation of whole and balanced accounting framework which indicates effective financial operation. However, Alio (2006) stated that the recording of business is usually performed by the book-keeper but since the craftsmen runs Small and Medium scale Enterprises, the size of record may be kept by the manager which may not warrant a book-keeper.



According to Akamobi (2001) a good book keeping record should at least fulfill the following purposes: Preserve intact the assets of a business, Show the liabilities of a business at any given time, provide useful information for management control and decision, present, when necessary, a fair and correct view of the state of business at any given time, facilitate auditing, confirm with statutory requirement, give effects to the terms of agreement of partners and association of persons doing business together, provide information for the completion of tax. Alio (2006) outline the information recorded by the manager which will be useful to him as:

- Making available information to the manger for decision making
- Helping in the area of performance evaluation both to the manger and other categories of work-force.
- Helps in the costing of projects and other business ventures.
- It helps in the maintenance of accountability.

Financial competencies as outlined by Anyakoha (2009) include: Knowledge of accounts, knowledge of costing, ability to interpret financial statement, ability to acquire the skill of preparing financial statement, knowledge of factors involved in decision to grant loan by financial houses, knowledge of business laws, ability to understand pay roll and various deductions and ability to budget and forecast.

The competencies are needed by refrigeration and air ó conditioning entrepreneurs to assist them take control of money, which is wealth. The competencies require prudence in spending, control of inflow and outflow of funds, debt management, credit

management and hire purchase management. However, financial competencies required by refrigeration and air conditioning entrepreneurs for establishing SMEs include: proper and prudent money management, control of in-coming and out-going finances, keep proper records of all transactions and above all be aggressive towards profit making.

### **Marketing Competencies**

A market is a place where buyers express their demands for a good or service and sellers provide their supplies of such goods or services. Marketing, according to Hornby (2006) is the theory and practice of buying and selling of goods and services. Marketing according to Dow and Hendon (1991) in Okonkwo (2009) is the sum totals of all business activities that direct the flow of sales of products and services from producers to consumers. Hisrich and Peters (2002) stated that marketing competencies are critical to a venture's continued success. As the company grows, it will need to develop new products and services to maintain its distinctiveness in a competitive market. According to Hisrich and Peters many often blame lack of finances or poor management for the failure of business, but a closer look will often reveal that the real problems relate to marketing issues such as: Identifying the customer, defining the right product and service to meet customer needs, pricing, distribution, promotion, identifying the target market, characteristics of the customer, and buying situation.

Marketing competencies as outlined by Anyakoha (2009) include; knowledge of seasonal fluctuation of goods, ability to determine current and future trends in sales of products, ability to determine availability of goods/raw materials for production and

storage of finished goods, ability to determine and interpret factors which indicates extent and strength of competition and ability to determine what customers need.

Stokes and Wilson (2002) stated that marketing competency is the gathering of information, and making judgments based on it, is a key entrepreneurial competency. A competent marketing manager according to Stokes and Wilson should possess the necessary qualities and skills to ensure an effective performance of an enterprise's marketing activities. The following were outlined as marketing competencies: Judgment, experience, knowledge, communication, motivation, planning, and vision.

They concluded that successful entrepreneurial marketing often relies on the competency of the owner-manager in these key areas. Aminu (2009) observed that in terms of market, entrepreneurs are reluctant to identifying the appropriate market for their products/services. Most entrepreneurs do not actually know the right market for their products and how to take advantage of market for possible profit and capture the market share. According to Aminu, many entrepreneurs have myopic view of the market due to lack of marketing education to market their goods. Therefore, for a refrigeration and air-conditioning entrepreneur to overcome this market problem, an entrepreneur requires marketing competencies to articulate the entire necessary marketing programme that may lead the entrepreneur to success and acceptability of their products in the market.

However, Aminu (2009) state that marketing is the process of bringing awareness to customers about the enterprise products or services, and therefore entrepreneurs requires or services, aggressive marketing to sale its products. Aggressive marketing of

entrepreneur's product/services requires: Advertising, sales promotion, effective distribution system, and right price for the products/services. In refrigeration and air conditioning, marketing however, there is a kind of market arrangement where buyers and sellers are in contact with one another. Refrigeration and air conditioning marketing enterprises involves the movement of refrigeration products after they have been produced, into the possession and ownership of final users. Thomas and Onah (1993) in Okonkwo (2009) noted that two activities usually take place where a market manifest itself namely; communication and exchange of goods and services. They explained that in a simple market, this will be done by direct face to face communication, but in sophisticated ones, an elaborate system of communication may exist. A number of factors according to the author determine the selection of a market, and they include distance, transportation problem, handling, selling charges and price quotations. Therefore, for refrigeration and air - conditioning entrepreneurs to succeed, they need an aggressive marketing competency in the area of advertisement, sales promotion, effective price system, and channel of distributing their products/services to the consumers.

### **Managerial Competencies**

Management is the organizing and controlling of the affairs of a business or a sector of business. Management according to Osuala (2001) is the art of getting things done through people; it is a process of achieving an organization's goal through coordinated performance of five specific functions namely; planning, organizing, staffing, directing and controlling. Managerial competencies are competencies which are

considered essential for staff with managerial or supervisory responsibility in any service or programme area, including directors and senior posts. (<http://www.unido.org/fileadmin/media/documents/pdf/Employment/UNIDO-CompetencyModel-Part1.pdf>). Therefore, management, in business, is the techniques and expertise of efficient organization, planning, direction, and control of the operations of a business. Then functions of Managers according to Microsoft Encarta (2009) supervise, monitor, and coordinate the different areas. For example, financial managers focus on generating and reinvesting finance capital. Human resource managers help recruit people with desirable skills and place them where they are most needed. Marketing managers help sell final goods and services to customers.

William (2005) outline ten core competencies comprise good leadership as:

- *Visionary*: Good leaders create a vision, a picture of the future, of where they want to take their organizations. Leaders can improve both the quality and acceptance of the vision by partnering with their peers, executive team, key employees throughout the organization or outside consultants. To get the best vision you need lots of ideas, and people support what they help to create.
- *Inspirational*: Once a vision is established, great leaders can inspire everyone in the company to get onboard. Employees in great organizations are passionate about what they do. This inspiration extends to customers, investors, suppliers, boards of directors and all other stakeholders. This doesn't mean good leaders have to be charismatic or great public speakers, though some are. Leaders may inspire by

example or in low-key ways. Every word and action demonstrates their passion for the vision.

- *Strategic:* Strategic leaders are clear and directly face the strengths and weaknesses of their own organizations, as well as their external opportunities and threats. They think in terms of leverage, fishing where the big fish are and partnering to gain market advantage. While interested in one sale, they would rather create pipelines and strategic alliances that generate thousands, or hundreds of thousands, of sales.
- *Tactical:* Wired like businesspeople, good leaders are bottom-line oriented and extraordinarily committed to results. They thrive on facts, figures, numbers and data. They're interested in ROI, ROE and EBIDTA. If not numbers-oriented themselves, they surround themselves with strong financial talent.
- *Focused:* Once vision and mission (a brief, clear statement of the reasons for an organization's existence) are established, good leaders achieve what they set out to do before launching new initiatives. By contrast, poor leaders may have dozens of conflicting programs and priorities. Leaders with 20 priorities essentially have no priorities.
- *Persuasive:* Not necessarily salespeople, good leaders can bring others to their point of view using logic, reason, emotion and the force of their personalities. They motivate by persuasion rather than intimidation. The key here is the leader speaking from his or her heart.
- *Likeable:* Good leaders are people-centric. They may be scientists, engineers or technical experts by background, but they recognize interpersonal skills are

paramount. They display high degrees of emotional intelligence, and thrive on finesse and likeability. They want to be liked -- and they are. Again, the key is what's inside the leader. Likeability comes from the inside out.

- *Decisive*: Sometimes shooting from the hip, good leaders can make decisions quickly often with incomplete data. According to William as Theodore Roosevelt said, "In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing." Rarely is a leader able to get 100 percent of the information needed for a decision. Typically it is "60 percent and go" or "80 percent and go."
- *Ethical*: Good leaders are direct and straightforward. They set clear performance expectations and hold people accountable. This requires being direct and truthful, which can be difficult but more often than not is natural for the principle-based leader. Good leaders know it's hard to beat the truth.
- *Open to feedback*: Good leaders are open and dedicated to lifelong learning. They seek feedback about their performance through direct conversations and objective tools such as 360-degree reviews. Seeking continuous improvement in their companies, they also seek it for themselves. William further explained that, Denver leadership expert Jim Downey comes down on the side that good leaders can be developed. "Good leaders develop by practicing the right behaviors," he says. "It is like golf. An individual can spend hours on the driving range, but if him/her are not practicing the right fundamentals, will never be a good golfer. William asserted that by practicing the ten core competencies of good leaders, individual can improve

his/her leadership skills. William concluded that individual will also be modeling the right behaviors (fundamentals) for others, who watch their leaders surprisingly closely. This may end up an organization full of leaders with surprising success.

### **Managerial/Supervisory Competencies (For employees who supervise others)**

- *Values and Ethics:* Integrity and Respect: Demonstrated respect of people and laboratory principles. Incumbent maintains a respectful, diverse and inclusive work environment where decisions and transactions are transparent and objective. They hold themselves, their employees, and their organizations accountable for their actions.
- *Strategic Thinking:* Analysis and Ideas Incumbent offers advice and creates plans based on analysis of issues and trends, and how these link to the responsibilities, capabilities, and potential of their organization. Scan an ever-changing, complex environment in anticipation of emerging crises and opportunities. Develop well-informed advice and strategies that are sensitive to the various needs of multiple stakeholders and partners, reflect the strategic direction of the department and position the organization for success.
- *Engagement:* People, Organizations and Partners: Engage people, organizations, and partners in developing goals, executing plans, and delivering results. Mobilize teams, building momentum to get things done by communicating clearly and consistently, investing time and energy to engage the whole organization. Use negotiation skills and adaptability to encourage recognition of joint concerns,



collaboration, and to influence the success of outcomes. Follow and lead across boundaries to engage broad-based stakeholders, partners, and customers in a shared agenda and strategy.

- *Management Excellence:* Action management, people management, financial management deliver results by maximizing organizational effectiveness and sustainability. Ensure that people have the support and tools they need and that the workforce as a whole has the capacity and diversity to meet current and longer-term organizational objectives. Align people, work, and systems with the business strategy to harmonize how they work and what they do. Conscientiously assign performance goals, offer year-round performance feedback, and conduct timely performance discussions and reviews.
- *Resource Management:* Budget Management and Management of other Resource; Accesses and reviews standard budget reports as appropriate for the organization; creates yearly spending plan for all budget accounts; keeps appropriate records of organizational spending and tracks it against spending plan; reallocates resources as organizational change occurs. Regularly analyzes budget data to identify trends and improve the cost effectiveness of unit processes and practices; gathers and organizes credible data to make a business case for changes and additional resources. ([http://wdrs.fnal.gov/elr/competencies\\_04.pdf](http://wdrs.fnal.gov/elr/competencies_04.pdf)).

However, Oshgbemi (1983) in Okoro (2006) asserted that any entrepreneur without good knowledge of planning as a managerial function cannot operate optimally. Planning is an important and invaluable ingredient in any enterprise. At present according

to Osuala (2009) not all colleges running vocational programmes teach entrepreneurship education but gradually entrepreneurship education is being included as an essential part of the vocational education programme. Osuala further stated that at the secondary schools, and the colleges of education, entrepreneurship is not included in the curriculum, but the polytechnics and some universities have started teaching their students entrepreneurship education.

### **Technical College**

The rate of unemployment among youths especially school leavers has become an issue of concern among educators, parents, employers of labour and government at all levels (Federal, states and local governments). Much of the concern is centered on the quality, standard and outcome of the knowledge and skill acquired from the country's education system as well as how students are prepared for gainful employment on graduation. In a bid to arrest unemployment, the Federal Government of Nigeria came up with the fourth edition of the National Policy on Education (NPE), (2004). The policy (NPE) aims at making education at all levels more functional and responsive to socio-economic and technological development of the country. One of the major thrust of the policy is to provide a more comprehensive and explanatory national education system that will give individual student the opportunities to acquire relevant skills, both mental and physical competencies and ability for self reliant, gainful employment, and further education in any chosen occupation.

Recognizing the fact that Vocational and Technical Education (VTE) is an integral part of technological and economic development of the nation, the Federal Republic of Nigeria FRN (2004) define Vocational and Technical Education as that type of education which leads to the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. The FRN further gives the aims of Technical and Vocational Education as to:

- Provide train man power in the applied science, technology and business particularly at craft, advance craft and technical levels.
- Provide the technical knowledge and vocational skills necessary for agriculture, commercial and economic development.
- Give training and impart the necessary skills to individual who shall be self éreliant economically.

In pursuance of the above goals, trainees completing Technical Colleges programme as stated by FRN (2004) shall have the following options:

- Secure employment either at the end of the whole course or after completing one or more modules of employable skill.
- Set up their own business and become self employed and be able to employ others
- Pursue further education in advance craft/technical programme and in post secondary (tertiary) technical institutions such as science and technical colleges, polytechnic colleges of education (technical) and universities.

Technical Colleges are formal institutions where individual acquire skills, attitude and scientific knowledge. Okorie (2005) stated that Technical Colleges in Nigeria are established to prepare individuals to acquire practical skills and basic scientific knowledge however, Nwachuku, Bakare and Adjika (2009) stated that Technical College provide students through training with the relevant and adequate knowledge, skills and attitude for employment under the guidance of a teacher in a related occupation.

Technical Colleges in the context of this study are institutions that are equipped with instructional materials/equipment in various fields of occupation to provide skills, knowledge and attitude necessary for employment in specific occupation under the guidance of a train teacher in a related occupation.

### **Technical College Refrigeration and Air – Conditioning Graduates**

Technical College refrigeration and air ó conditioning graduates in the context of this study are those groups of Technical College students who have graduated with specialty in refrigeration and air ó conditioning works as a trade. In line with the policy statement, the revised National Technical Certificate (NTC) and the Advanced National Technical Certificate (ANTC) programmes curriculum and course specifications were published in 2001 for refrigeration and air ó conditioning works and other Vocational courses in the Technical Colleges by National Board for Technical Education (NBTE). The publication was sponsored by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) - Nigeria project in support of the Revitalization of Technical and Vocational Education in Nigeria. It is a comprehensive curriculum in a

modular form. The refrigeration and air - conditioning graduates acquired knowledge, attitude and skills on:

Trade courses: refrigeration and air conditioning principles, compressor motors, charging of refrigerant oil, heat exchanger, load estimation, controls, installation and insulation of pipes and ducts, and workshop practice in refrigeration and air conditioning works. Trade related courses: Basic electricity, general metal work, and engineering drawing. General education courses: English language, mathematics, chemistry, physics, information and communication technology, and economics. The students also have a two month Student Industrial Work Experience Scheme (SIWES) immediately after second year in the college. At the end of three year training, students sat for National Technical Certificate (NTC) and Labour Trade Test part one/two before graduation.

The insufficient college training in terms of technical skills required of the various skills in refrigeration and air conditioning trade has deprived or failure of the college products to set up their own SMEs. Entrepreneurial competencies skills deficiency according to Ogwu (2004) in Ogbuanya, and Fakorede (2009) lead the failure of some college products that might have venture in to self- employment. Olufunwa (2009) recommended that every Vocational and Technical Institution at all levels should be made to offer entrepreneurship education which at last leads to self reliance instead of looking for white collar jobs that do not exist. What is needed today and tomorrow by Technical College graduates in general and refrigeration and air conditioning trade in

particular are entrepreneurial competencies background rugged to transform Nigeria in to positive technological breakthrough with the ability to meet its immediate demand. As the world is changing fast there must be an increase emphasis on entrepreneurial competencies for establishing Small and Medium scale Enterprise.

### **Small and Medium Scale Enterprise (SMEs)**

Small and Medium scale Enterprise (SMEs) according to United Nations Organization (1984) is that enterprise with a minimum of five and maximum of hundred employees. SMEs vary from one country to another, depending on whether it is developed or developing. United Nations Environment Programme (UNEP) (2000) stated that SMEs vary from country to country. SMEs generally have a small number of employees from 1 to 150, small production capacity, and limited financial resources. In many countries they dominate the economy, accounting for up to 80 percent of economic activity. Susan (2011) stated that, what exactly an SME or Small to Medium Enterprise is depends on who's doing the defining. Industry Canada uses the term SME to refer to businesses with fewer than 500 employees, while classifying firms with 500 or more employees as "large" businesses. Therefore, SMEs is a setting up of business ventures that have very few employees and is mostly sole proprietorship and also have a very small starting capital.

### **Relevance of SMEs in Nigeria**

Small and Medium scale Enterprise are believed to be the engine room for the development of any economy because they form the bulk of business activities in a growing economy like that of Nigeria. This is manifested in the following ways:

- *Employment generation:* 30% contribution to global GDP Employment generation capacity of about 58% of the global working population. SMEs play a critical role of principal safety net for the bulk of the population in developing economies. Their labour intensity structure accounts for their recognition as a job creating avenue
- *Rural development:* SMEs constitute major avenues for income generation and participation in economic activities in the lower income and rural brackets of developing societies especially in agriculture, trading and services. The employment opportunities. Provided reduces rural-urban migration and allows for even development.
- *Economic growth and industrialization:* National economic development prospects hinge on entrepreneurial energy of vibrant SMEs as most big business concerns grew from small scale to become big icons. SMEs protect nations from geographical cost-benefit permutations of a few multinationals who are ever prepared to close up there businesses at the slightest provocation or appearance of economic downturn.
- *Better utilization of indigenous resources:* The considerable low capital outlay required for setting up SMEs enables them to convert minimal resources into productive areas or ventures. They offer veritable outlets for technological

advancement especially in businesses with rudimentary technological requirements.

(<http://www.successinyourbusiness.com/the-relevance-of-smes-in-nigeria>).

Many economies developed and developing have come to realize the value of small businesses. They seem to be characterized by dynamism, witty innovations, efficiency, and their small size allows for faster decision making process. The benefits of SMEs include; contributions to the economy in terms of output of goods and services, creation of jobs at relatively low capital cost, especially in the fast growing service sector; It is a vehicle for the reduction of income disparities thus developing a pool of skilled or semi-skilled workers as a basis for the future industrial expansion; improve forward and backward linkages between economically. Socially and geographically diverse sectors of the economy provide opportunities for developing and adapting appropriate technological approaches; offer an excellent breeding ground for entrepreneurial and managerial talent, the critical shortage of which is often a great handicap to economic development among others.

(<http://www.successinyourbusiness.com/the-relevance-of-smes-in-nigeria>) SMEs are often called the backbone of the economy. SMEs are family-owned and operated businesses, providing employment and income within their local communities. SME may be a five person or a one-man refrigerator repair service. In some cases facilities can be quite basic, with hand-operated systems and few safety measures. SMEs are geographically scattered. Some are concentrated in urban centres like Federal Capital Territory while others are distributed throughout the countryside.



The Federal Capital Territory total population as outline by the National Population Commission (NPC) (2006) stands at 1,404,239. The population of people in FCT increases daily and the administration, academics, construction and business activities is at the peak, which leads to the high demand of refrigeration equipment. According to United Nations Environment Programme UNEP (2000) refrigeration has become an important component of the domestic economies of many developing countries. As industrialization increases, the demand for domestic and commercial refrigeration grows with it. The need for sophisticated and mobile refrigeration equipment has also grown to facilitate the distribution of food on a national basis and to transport a variety of perishable products, such as food, flowers and plants to export markets. The tourism industry has also increased refrigeration and air conditioning requirements for many countries. Refrigeration and air- conditioning contains many economic enterprises through which people can earn income in FCT such as: Installations, designing and constructing of ice making machine, maintenance, diagnose fault and repair of refrigeration equipment for domestic, commercial, industrial and for food preservation.

### **Theoretical Frame Work**

Theory is a formal set of ideas that is intended to explain why something happen or exist. Okorie (2000) define theory as a mental viewing that is an idea or mental plan of the way to do something. Okorie stresses that theory is a formulation of apparent relationships phenomena which have been verified to some degree. Ezeji (2001) stated

that theories are representatives of system of belief about the nature of people, objects and phenomena since they contain assumptions about the extent at which human beings and phenomena can be modified through experiences and the limit that have to be placed upon human aspiration. Therefore theory is a personal principles or idea which an individual have about particular phenomena or happening and which have been tested and proved empirically to be correct and acceptable by the world.

Theoretical framework is a theory that serves as the basis for conducting research or those relevant theories on which a researcher builds his/her work upon. Gall, Gall and Borg (2007) define theoretical frame work as the specification of set of theories that is inferred from observed phenomena of other theorist. . Wikipedia (2011) stated that theoretical framework is a logical structured representation of the concepts; variable and relationship involved in a scientific study with the purpose of clarity identifying what will be explored, examined, measured or describe. Theoretical framework of a study therefore is a structure that can hold or support a theory of a research work. It presents the theory which explains why the problem under study exists.

A theory provides guiding principles which are of great assistance in solving day ó to ó day problems. According to Kumar (2006) a theory is a statement or a group of statements established by reasoned arguments, based on the known facts, intended to explain a particular fact or event, explanation for which certain proof is still needed but which appear to be reasonable. It is that part of science or art that deals with general principles and methods as opposed to practices, a set of rules or principles for the study

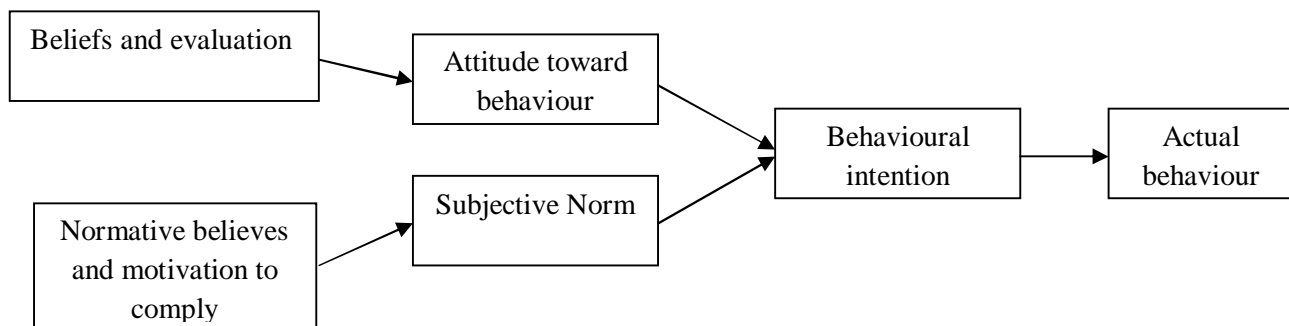
of the subject. Theory of a subject consist of a body of principles, generalization, models, policies, laws etc. these help in the advancement of knowledge in the field.

In the aspect of entrepreneurial competencies, several theories and models can be use. This study considers four theories.

- Theory of Reasoned Action (TRA)
- Cognitive Load Theory (CLT)
- Theory Y- Integration of individual and organization goal.
- Needs Theory

### **The Theory of Reasoned Action (TRA)**

The theory of reason action is a model that finds its origins in the field of social psychology. This model developed by Fishbein and Ajzen (1975) defines the links between beliefs, attitudes, norms, intentions and behaviour of individuals.



Theory of Reasoned Action as developed by Fishbein and Ajzen.

In this theory a person's attitudes towards a behaviour consist of a belief that, that particular behaviour leads to a certain outcome; and an evaluation of the outcome of that behaviour. If the outcome seems beneficial to the individual, he/she may then intend to or actually participate in a particular behaviour. Also included in one's behaviour is their concept of the subjective norm which is a person's perception of what others around them believe that the individual should do. In its purest essence, subjective

norm is a type of peer pressure whether or not a person participates or intends to participate in any behaviour is influenced strongly by the people around them. These people may include friends, family, community leaders, society, and even celebrities, the characteristics of the tasks of the interface or of the user, the type of development implementation, etc. People may also be inclined or not inclined to participate in a behaviour based upon their desire to comply with others. Laws or rules prohibiting behaviour. Ultimately, one's attitude toward behaviour can lead to an intention to act or not to act as the case may be; this intention may or may not lead to behaviour.

This theory relates to the present work because the acceptability or otherwise of acquiring entrepreneurial competencies by Technical College refrigeration and air ó conditioning graduates largely depends on their beliefs about the competencies. Those who feel the entrepreneurial competencies will help them better in their occupational work and will give them an edge above colleagues in the eyes of the society will not hesitate in acquiring the competencies. Again, if the laws or policies are made compelling the Technical College students in general and refrigeration and air ó conditioning in particular to acquire entrepreneurial competencies as a prerequisite for graduation may have an impact towards the entrepreneurial competencies for establishing small and medium scale enterprise.

### **Cognitive Load Theory (CLT)**

Yet another theory that can be applied to entrepreneurial competencies is the cognitive load theory. The cognitive load theory is an instructional theory developed by

psychologist John Sweller in (1998) to describe the learning process in terms of an information processing system involving long term memory which effectively stores all of our knowledge and skills on a more or less permanent basis, and working memory, which performs the intellectual task associated consciousness. This theory, based on the above view of the mind Sweller (1998) provides a model of how the mind processes information based on two tenets;

- Human working memory is limited; we can only keep in mind a few things at a time. This poses a fundamental constraint on human performance and learning capacity.
- Two mechanisms to circumvent the limits of working memory are; Schema acquisition, which allow us to chunk information in to meaningful units, and automation of procedural knowledge.

The first mechanism provides information about how the mind understands and processes information. The second mechanisms that circumvent working memory and automation of procedural knowledge, deals with skills acquisition. Once a particular skill is acquired, automatic processing can by - pass working memory. In other words, with enough practices, an activity can be carried out without conscious processing.

Cognitive Load Theory and the study:

Teaching in technical area is often bases on the formula of presenting a new topic showing a few examples and assigning practice exercises. Some simple adjustments to

the presentation examples practice formula can accommodate cognitive load theory. To learn recurrent skills, declarative knowledge of the abstract concepts on which the skills are based, as well as procedures or rules necessary to perform the skills, should be simultaneously in working memory. Both the concepts and procedures that use those concepts to solve problems should be presented together. One approach to this is to partition the information in to small segments to prevent overload, then demonstrate application of the concepts within each segment.

The theory relates to this study because it emphasizes on the techniques upon which the acquisition of technical competency can be achieved. This will provide a guide for the researcher in recommending the most appropriate ways to adopt in acquiring entrepreneurial competencies by technical college refrigeration and air ó conditioning graduates.

## **Theory Y**

Theory Y- Integration of individual and organization goals was propounded by McGregor (1969) in Toby (1997) pointed out that people were treated as they were under X assumptions under the mistaken notion of what is cause and what is effect. In light of what he later considered being a mistake notion, McGregor offer theory Y as a more accurate set of assumption about human nature and motivation.

Under the assumption of theory Y, McGergor suggests that managerial decisions and actions are determine by different set of assumptions. The theory Y assumes that people do not hate work and that people do not have to be forced threatened; that

motivation, potential for development, capacity for assuming responsibility, and readiness to direct behaviour towards organizations goals do not put these attitudes there. As stated by GcGregor the responsibility of the management is to create a climate in which people organize and develop these human characteristics for themselves since people will only commit to an organization to the extent to that they can see ways to satisfying their own ego and development needs.

Essentially the assumptions of theory Y are that:

- The expenditure of physical and mental effort at work is as natural as play or rest.
- External control and threat of punishment are not the only means for bringing effort towards organizational objectives. Man will exercise self direction and self control in the service of objectives to which he is committed.
- Commitment to objectives is a function of the rewards associated with the achievement.
- The average human being learns under proper conditions, not only to accept, but to seek responsibility.
- The capacity to exercise is relatively high degree of imagination, ingenuity, and creativity in the solution of organizational problems is widely, not narrowly, distributed in the population.
- Under the condition of modern industrial life, the intellectual potentialities of the average human being are only partially utilized.

Theory Y and this study.

An entrepreneur who is the manager of SMEs can enhance his/her managerial competencies such as leadership capacity and effectiveness by working towards the integration of individual and organizational goals, that is , by making decisions and taking actions which are dominated by assumptions underlying theory Y.

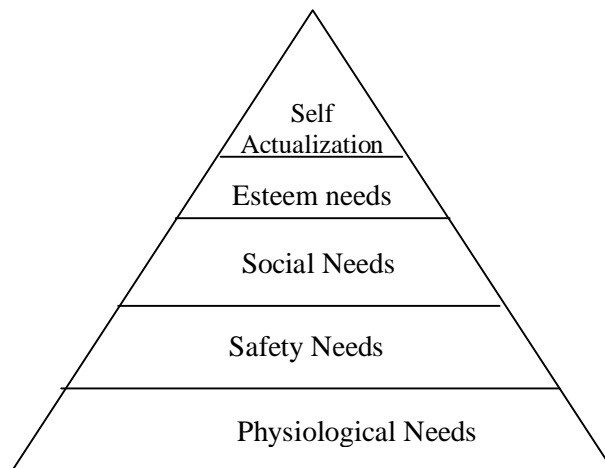
## **Needs Theory**

Maslow's Theory of Motivation Hierarchy of Needs. Dr. Abraham Maslow 's "A Theory of Human Motivation " appeared in Psychological Review, which were further expanded upon: Abraham H. Maslow attempted to formulate a needs-based framework of human motivation and based upon his clinical experiences with people, rather than as did the prior psychology theories of his day from authors such as Freud and B.F. Skinner, which were largely theoretical or based upon animal behaviour. From this *theory of motivation*, modern leaders and executive managers find means of motivation for the purposes of employee and workforce management. Abraham Maslow's book *Motivation and Personality* (1954) formally introduced the Hierarchy of Needs.

The basis of Maslow's motivation theory is that human beings are motivated by unsatisfied needs, and that certain lower factors need to be satisfied before higher needs can be satisfied. According to Maslow, there are general types of needs (physiological, survival, safety, love, and esteem) that must be satisfied before a person can act unselfishly. He called these needs "deficiency needs." As long as we are motivated to satisfy these cravings, we are moving towards growth, toward self-actualization. Satisfying needs is healthy, while preventing gratification makes us sick or act evilly.



As a result, for adequate workplace motivation, it is important that leadership understands the active needs active for individual employee motivation. In this manner, Maslow's model indicates that fundamental, lower-order needs like safety and physiological requirements have to be satisfied in order to pursue higher-level motivators along the lines of self-fulfilment. As depicted in the following hierarchical diagram, sometimes called 'Maslow's Needs Pyramid' or 'Maslow's Needs Triangle', after a need is satisfied it stops acting as a motivator and the next need one rank higher starts to motivate.



**Self-Actualization:** Self actualization is the summit of Maslow's motivation theory. It is about the quest of reaching one's full potential as a person. Unlike lower level needs is never fully satisfied, as one grows psychologically there are always new opportunities to continue to grow. Self actualized people tend to have motivators such as: Truth, Justice, Wisdom, and Meaning. Self actualized persons have frequent occurrences of peak experiences which are energize moments of profound happiness and harmony. According to Maslow, only a small percentage of the population reaches the level of self actualization

**Esteem Needs:** After a person feels that they "belong", the urge to attain a degree of importance emerges. Esteem needs can be categorized as external motivators and internal motivators. Internally motivating esteem needs are those such as self- esteem accomplishment and self respect. External esteem needs are those such as reputation and recognition. Some examples of esteem needs are; Recognition (external motivator), Attention (external motivator), Social status (external motivator), Accomplishment (internal motivator), and Self- respect (internal motivator). Maslow later improved his model to add a layer in between self- actualization and esteem needs: the need for aesthetics and knowledge.

**Social Needs:** Once a person has met the lower level physiological and safety needs, higher level motivators awaken. The first level of higher level needs is social needs. Social needs are those related to interaction with others and may include: Friendship, Belonging to a group, Giving and receiving love.

**Safety Need:** Once physiological needs are met, one's attention turns to safety and security in order to be free from the threat of physical and emotional harm. Such needs might be fulfilled by: Living in a safe area, Medical insurance, Job security, and financial reserves. According to the Maslow hierarchy, if a person feels threatened, needs further up the pyramid will not receive attention until that need has been resolved.

**Physiological Needs:** Physiological needs are those required to sustain life, such as: Air, Water, Food, and Sleep. According to this theory, if these fundamental needs are not satisfied then one will surely be motivated to satisfy them. Higher needs such as

social needs and esteem are not recognized until one satisfies the needs basic to existence. ([http://www.envisionsoftware.com/articles/Maslows\\_Needs](http://www.envisionsoftware.com/articles/Maslows_Needs)).

### Needs Theory and Entrepreneurial Competencies for Establishing SMEs

If Maslow's theory is true, there are some very important leadership implications to enhance workplace motivation. There are staff motivation opportunities by motivating each employee through their style of management, compensation plans, role definition, and company activities.

- Physiological Motivation: Provide ample breaks for lunch and recuperation and pay salaries that allow workers to buy life's essentials.
- Safety Needs: Provide a working environment which is safe, relative job security, and freedom from threats.
- Social Needs: Generate a feeling of acceptance, belonging, and community by reinforcing team dynamics.
- Esteem Motivators: Recognize achievements, assign important projects, and provide status to make employees feel valued and appreciated.
- Self-Actualization: Offer challenging and meaningful work assignments which enable innovation, creativity, and progress according to long-term goals.

Everyone is not motivated by same needs. At various points in their lives and careers, various employees will be motivated by completely different needs. It is imperative that you recognize each employee's needs currently being pursued. In order

to motivate their employees, leadership must be understand the current level of needs at which the employee finds themselves, and leverage needs for workplace motivation.

### **Review of Related Empirical Studies**

A number of studies have been conducted on entrepreneurial competencies. Among these studies is the work carried out by Allu (2006). Using survey research design, Allu (2006) conducted a study on work competencies needed by technical college metal work graduates for entrance into private enterprises in Nasarawa state. The purpose of the study was to identify work competencies needed by technical college metal work graduates for entrance into private enterprises in Nasarawa state. Research questions were developed and answer in line with the purpose of the study. Hypothesis were formulated and tested at probability of 0.05 level of significance. A structured questionnaire was used for data collection from 104 respondents. The data collected were analyzed using mean and standard deviation to answer the research questions, while t-test statistics was used to test null hypotheses. Major finding from the study revealed that 101 competencies were identified as important work competencies, needed for entrance into private enterprises. It was recommended that the competencies identified should be included in the curriculum of technical colleges and vocational centers.

Okoro (2006) carried out a study on entrepreneurial competencies needed by business education students for self- reliance: Imperative for curriculum development. The purpose of the study was to ascertain the entrepreneurial competencies required by business education graduates for self reliance. The study adopted a survey design. Two

research questions were developed and answer in line with the purpose of the study. Two hypotheses were formulated and tested at 0.05 level of probability. The study was carried out in the southeast geopolitical zone. The population of the study consists of 48 entrepreneurs in commercial occupation and 36 business education lecturer. The size of the population was manageable no sample was drawn. A structural questionnaire was use for data collection. The instruments contain 26 questionnaire items. The items were made up of eight managerial, seven accounting, and seven marketing competencies. The respondents were requested to score the entrepreneurial competencies as to their level of importance in self reliance on a five point scale as very important 5, importance 4, undecided 3, unimportant 2, and very unimportant 1. The instrument was subjected to face and content validity by three experts. The reliability of the instrument was established using Cronbach Alpha coefficient for internal consistency. A reliability coefficient of .78 was obtained, indicating that the instrument was reliable. The instrument was administered and collected through personal contact by the researcher and two research assistants. Data were analyzed using Mean, standard deviation for research questions the students  $t$ -test for testing the hypotheses. Any item with a mean of 3.50 and above was considered important or agrees, while any item below 3.50 is considered otherwise. The study identified 22 entrepreneurial competencies that are important for self ó reliance. The study also reveals that lack of adequate text books and other instructional materials score the highest mean 4.36 on factors that hinder the teaching of entrepreneurial competencies. The study shows that the respondents generally uphold the importance of entrepreneurial competencies for self ó reliance. It was recommended that

university should develop and integrate entrepreneurship education in to business education curriculum and text books and other instructional materials should be developed and made available.

Enete, Amusa, and Eze (2009) conducted a study on entrepreneurial competency required by students of schools of Agriculture in south western Nigeria for processing cocoyam in to flour and chips for employment on graduation. The purpose of the study is to investigate entrepreneurial competency required by students of schools of Agriculture in south western Nigeria for processing cocoyam in to flour and chips for employment on graduation. Three research questions and hypothesis guided the study. The study was carried out in the south was Nigeria. The population of the study was 440 made up of 200 instructors in schools of agriculture in Ondo and Oyo state respectively and 240 food processors in the two states. The sample of the study was 56. This is made up of 56 instructors purposively sampled from the department of crop sciences and Home Economics in the two schools and 30 food processors from the two states. The instrument use for data collection was 33 competency structured questionnaire which was face validated by three experts. Split- half technique and cronbach alpha reliability method were adopted to determine the internal consistency of the competency questionnaire item; a cronbach alpha co efficient of 0.84 was obtained. Fifty six copies of the instrument were administered; retrieved and analyzed using weighted mean and standard deviation while the hypotheses were tested using t-test statistics. It was found out that all the 33 entrepreneurial competencies identified in the cocoyam processing in to flour and chips

were required by the students. It was also found out from the hypothesis that there is no significant difference in the mean responses of instructors and food processors in the 33 entrepreneurial competencies required by students in processing cocoyam in to flour and chips be packaged and used to improve the curriculum of crop production and processing in schools of agriculture in south western Nigeria for self and paid employment of the students on graduation. It was recommended that such competencies need to be incorporated in to the curriculum of crop production and processing in schools of agriculture in southwestern Nigeria.

Olaitan, Eze, and Ogonnaya (2009) also conducted an empirical study on entrepreneurial competencies required by secondary school graduates for entering in to oil palm processing enterprise in south eastern states of Nigeria. The study was design to identify entrepreneurial competencies required by secondary school graduates for entering in to oil palm processing enterprise in south eastern states of Nigeria. Survey and function of industry design were adopted for the study. Three research questions were developed and answered in line with the purpose of the study. Three hypotheses were formulated and tested at the probability of 0.05 levels of significance and 457 degree of freedom. The study was carried out in south eastern state of Nigeria. Sample for the study was 459 made up of 277 teachers of agricultural science and 182 oil palm processors. A 45 competency item questionnaire was developed from literature reviewed and had a four point response scale of highly needed (HN), averagely needed (AN), slightly needed (SN) and not needed (NN). The questionnaire was face validated by three experts. Reliability of the questionnaire was determined through split half technique and alpha method which

yielded a co efficient of 0.84. The questionnaire was administered of 459 respondents made of 277 teachers of agricultural science and 182 registered oil palm processors. All the copies of the questionnaire were retrieved and analyzed using weighted mean and standard deviation to answer the research questions, while t- test statistics was used to test the hypothesis. The result of the study revealed that 11 competencies in planning, 16 competencies in processing of oil palm and 18 competencies in marketing of oil palm were required for success in oil palm processing enterprise. The study also revealed that there is no significant difference in the mean ratings of the responses of the teachers of agricultural science and oil palm processors on competencies required in planning oil palm processing and marketing of oil palm in oil palm enterprise. It was recommended that the entrepreneurial competencies identified by the study be package in to a training programme for empowering interested secondary school graduates for employment in oil palm processing enterprise.

Ejiofor (2010) conducted a study on work skills required by secondary school graduates for success in cassava production enterprise. Descriptive survey design was adopted. The major objective of the study was to investigate the work skills required by secondary school graduates for success in cassava production enterprise. The study was conducted at Aguata, Arumba zone area of Anambra state. Three research questions and hypothesis guided the study. The population of the study was sixty (60) made up of agricultural science teachers teaching in thirty three (33) secondary school and fourteen (14) extension agents in the study area. The entire population was studied. A structured questionnaire consist of thirty three (33) items was develop and use for data collection. It



was subjected to face validation by three experts. Internal consistency of the instrument was established using Cronbach Alpha which yielded the reliability co-efficient of 0.87. Sixty six (66) copies of the instrument were administered, retrieved and analyzed using mean, standard deviation were the hypothesis were tested using t- test statistics. The findings of the study revealed that secondary school graduates require work skills for success in cassava production enterprise. The study therefore recommended that the identified work skills should be incorporated in to the curriculum which should be integrated in to skill acquisition centres where it could be used for training unemployed secondary school graduates for self employment.

The above empirical studies relate to the present work because their method of research design, instrument for data collection, sampling technique, method of data analysis, validation of the instrument and the studies also investigate entrepreneurial competencies and skills for enterprise. This will serve as the bed rock for which the present work will be developed.

### **Summary of Related Literature**

In this chapter, effort has been made to review as much as possible literature related to this study, as such the researcher consulted text books, conference proceedings, articles from internet, journal both national and international, and project report. This was initiated by considering the conceptual framework which include the concepts of entrepreneur, entrepreneurship, entrepreneurship education, competencies, entrepreneurial competencies, technical, general personal attributes, financial, marketing

and managerial competencies, Technical College, Technical College refrigeration and air conditioning graduates, and small and medium scale enterprise.

Equally worth of mention are theories found to be related to the study, they include: Theory of Reasoned Action (TRA), Cognitive Load theory (CLT), Theory Y, and Needs Theory. The review also covered some empirical findings related to the study.

Although several studies have been conducted on entrepreneurial competencies required in different field of human endeavour but to the researcher knowledge, none of the study has been carried out particularly on the entrepreneurial competencies required by Technical College refrigeration and air conditioning graduates for establishing small and medium scale enterprise in Federal Capital Territory. Thus, the study aims at filling this gap.

## **CHAPTER III**

### **METHODOLOGY**

This chapter describes the procedures that were adopted in this study under the following subheadings: Design of the study, Area of the study, Population for the study, Sampling and Sampling Technique, Instrument for Data Collection, Validation of Instrument, Reliability of the Instrument, Method of Data Collection, and Method of Data Analysis.

#### **Design of the Study**

This study adopts a descriptive survey research design in which information relating to entrepreneurial competencies of Technical College refrigeration and air conditioning graduates were sought. Nworgu (2006) defined survey research design as that design that centres on people, their beliefs, opinion, attitudes and behavior. Also Cohen, Manion, and Morrison (2009) asserted that survey research is concerned with condition or relationships that exist, practical that prevail; beliefs, points of views, or attitudes that are held, processes that are going on; effects that are being felt; or trends that are developing. The survey research design is considered appropriate and suitable since the study elicit for information from refrigeration and air- conditioning teachers/instructors and craftsmen/ technician of small and medium scale enterprises on the entrepreneurial competencies required by Technical College refrigeration and air conditioning graduates for establishing small and medium scale enterprises (SMEs).

### **Area of the Study**

The study was carried out in Federal Capital Territory. The Territory was formed in 1976 from parts of Nasarawa, Niger, and Kogi States. The Territory is located just north of the confluence of the River Niger and Benue River. Abuja bordered by the states of Niger to the West and North, Ka<sup>69</sup> to the northeast, Nasarawa to the east and south, and Kogi to the southwest. Abuja is geographically located in the center of the country. The FCT is currently made up of six area councils, comprising the City of Abuja and five area councils, namely: Abaji, Gwagwalada, Kuje, Bwari, and Kwali. ([http://en.wikipedia.org/wiki/Federal\\_Capital\\_Territory,\\_Nigeria#Geography](http://en.wikipedia.org/wiki/Federal_Capital_Territory,_Nigeria#Geography)). The Federal Capital Territory is a fast developing city in Africa and the population is

increasing daily. These lead to demand of refrigeration and air - conditioning equipment at its peak for preservation of food, maintaining comfort condition for people, equipment and transportation due to the high temperature of the city. Technical College refrigeration and air ó conditioning graduates need to acquire entrepreneurial competencies to meet up with the demand.

### **Population for the Study**

The population for the study was 97 comprising of 7 refrigeration and air ó conditioning teachers/instructors in one Technical College and one Vocational Centre in Federal Capital Territory and 90 Craftsmen/Technicians of small and medium scale enterprises. This information was obtained from the Federal Capital Territory Administration Education Department, and Ministry of Commerce Industries and Tourism Abuja respectively. The population distributions are shown in Appendix.

### **Instrument for Data Collection**

The instrument for data collection in this study was structured questionnaire. The questionnaire items are made up of two sections namely: section one soliciting information on personal data of the respondents, while section two is structured into five parts (A, B, C, D and E). Part A deals on Technical Competencies with 20 items, Part B deals on General Personal Attributes Competencies with 17 items, Part C deals on Financial Competencies with 11 items, part D deals on Marketing Competencies with 12 items, while, Part E deals on Managerial Competencies with 21 items respectively required by Technical College Refrigeration and Air - Conditioning graduates for

establishing SMEs. A five - point response mode of Highly required (HR), Required (R), Undecided (UD), Moderately (MR), and Not Required (NR) with a corresponding numerical value of 5, 4, 3, 2 and 1, will be assigned to the response scales for the competencies items as represented below.

Highly Required (HR) = 5

Required (R) = 4

Undecided (UD) = 3

Moderately Required (MR) = 2

Not Required (NR) = 1

### **Validation of Instrument**

The Instrument was face validated by three experts, all from the Department of Vocational Teacher Education, University of Nigeria, Nsukka. The experts were requested to assess the items in the instrument in terms of clarity and appropriateness in addressing the problem of the study and research questions under investigation. The validates, criticism, advice and suggestions were incorporated in the final draft of the instrument.

### **Reliability of the Instrument**

To establish the reliability of the instrument, the questionnaire was tested on three (3) refrigeration and air - conditioning teachers/instructors and ten (10) refrigeration and air - conditioning craftsmen/ technician of SMEs. teachers/instructors and

craftsmen/technicians were randomly drawn within Government Science and Technical College Bukuru and Jos town respectively, all in Plateau state.

The Data obtained was analyzed using Cronbach Alpha reliability coefficient to determine internal consistency of the instrument. The instrument yielded a reliability Coefficient of 0.96. Cronbach Alpha is considered adequate because it is a generalized formula that is used for multiple scored response items (Ogbazi & Opkala 1994).

### **Method of Data Collection**

The questionnaire was administered to respondents by the researcher and three research assistants. The research assistants were briefed on how to administer the instrument in order to enhance the return rate of the instruments. Information on the proper completion of the instrument was explained to the research assistants who help in gathering the data for this study. A total of 97 copies of questionnaire were distributed; out of which 7 were for teachers/instructors of refrigeration and air - conditioning and 90 for craftsmen/ technicians of SMEs.

### **Method of Data Analysis**

Data collected from the respondents were analyzed using Mean, Standard Deviation and t-test. The Mean was used to answer research questions one to five. The cut off point for taking decision on each item was 3.50. Any item whose Mean is 3.50 and above was regarded as required while any item whose Mean is less than 3.50 were regarded as not required.

The five null hypotheses were tested at 0.05 level of significance using t-test. The calculated t-test ( $t_{\text{cal}}$ ) was compared with the table value ( $t_{\text{tab}}$ ) at 0.05 level of significance. This t- test of significance helps to determine the degree of difference in the responses of the respondents. Where the calculated value is less than table value, the null hypotheses indicates that there is no significant difference in the responses of the two groups of the respondents, therefore, the hypothesis ( $H_0$ ) of no significant difference was upheld for that item. For an item where the calculated value is higher than the table value, the null hypotheses indicates that there is significant difference in the responses of the two groups of the respondents, therefore, the hypothesis ( $H_0$ ) of no significant difference was rejected for that item.





## CHAPTER 1V

### PRESENTATION AND ANALYSIS OF DATA

This chapter presented the analysis and interpretation of the data for answering the research questions and testing the research hypotheses at 0.05 level of significance.

#### Research Question 1

What are the Technical Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the establishment of Small and Medium scale Enterprises?

The data for answering research question 1 are presented in Table 1

**Table 1**

**Mean Responses of the Respondents on the Technical Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises** N = 97

| S/N | Item Statements  | Mean | S.D  | Remarks  |
|-----|--|------|------|----------|
| 1   | Operate brazing equipment properly   | 3.72 | 0.55 | Required |
| 2   | Use charging trolling accurately   | 3.57 | 0.55 | Required |
| 3   | Skillfully cut copper pipe by using tube cutter and hacksaw  | 4.46 | 0.67 | Required |
| 4   | Use leak detector instruments to detect leaks in refrigeration and air conditioning equipment accurately | 4.42 | 0.67 | Required |
| 5   | Use different types of bending tools to bend copper pipes appropriately                                  | 3.60 | 0.62 | Required |
| 6   | Have skills in accuracy and neatness in brazing joints   | 4.47 | 0.66 | Required |
| 7   | Have high knowledge of mathematics to calculate and estimate cost of materials and production            | 4.40 | 0.70 | Required |
| 8   | Skillfully and properly swaging and flaring of copper tube   | 3.68 | 0.68 | Required |
| 9   | Maintain good quality of work  | 4.40 | 0.62 | Required |
| 10  | Maintain available tools and equipment   | 4.37 | 0.75 | Required |
| 11  | Have high knowledge on basic electricity principles  | 4.32 | 0.77 | Required |
| 12  | Have high knowledge on refrigeration and air conditioning principles                                     | 3.65 | 0.55 | Required |
| 13  | Remove, clean and fix air conditioner filter appropriately   | 4.34 | 0.57 | Required |
| 14  | Use appropriate refrigerant for appropriate equipment  | 4.31 | 0.70 | Required |
| 15  | Remove and replace drier accurately  | 3.91 | 0.69 | Required |
| 16  | Diagnose electrical fault and amend appropriately  | 4.32 | 0.68 | Required |
| 17  | Install air conditioner, window and split unit accurately  | 4.37 | 0.63 | Required |

|    |   |      |      |          |
|----|---|------|------|----------|
| 18 | Remove, clean, repair or replace the compressor appropriately | 3.59 | 0.67 | Required |
| 19 | Remove, clean, repair or replace the condenser appropriately  | 4.37 | 0.61 | Required |
| 20 | Remove, clean, repair or replace the evacuator appropriately  | 4.46 | 0.63 | Required |

The data presented in Table 1 revealed that 20 technical competencies have their Mean values ranged from 3.57 to <sup>74</sup>4.46. This showed that the Mean value of each item was above the cut-off point of 3.50, indicating that all the 20 technical competencies were required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The table also showed that the standard deviations (SD) of the items were within the range of 0.55 to 0.77, this indicated that the Mean values of the respondents were not far from one another in their responses.

## Research Question 2

What are the General Personal Attributes required by Technical College Refrigeration and Air - Conditioning Graduates for the establishment of Small and Medium scale Enterprises?

The data for answering research question 2 are presented in table 2

**Table 2****Mean Responses of the Respondents on the General Personal Attributes required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises N = 97**

| S/N | Item statements  | Mean | S.D  | Remarks  |
|-----|--|------|------|----------|
| 21  | Endure difficulties in the process of nurturing the enterprise     | 4.26 | 0.66 | Required |
| 22  | Take risk in the enterprise  | 3.90 | 0.64 | Required |
| 23  | Maintain good relationship with the community                      | 4.30 | 0.75 | Required |
| 24  | Maintain good relationship with client                             | 4.28 | 0.80 | Required |
| 25  | Have a sense of sympathy to customers in terms of damages or loses | 4.39 | 0.67 | Required |
| 26  | Have respect of the right of other workers                         | 3.58 | 0.57 | Required |
| 27  | Foster good human relationship both outside the firm and within    | 4.34 | 0.69 | Required |
| 28  | Have a sense of responsibility                                     | 4.38 | 0.78 | Required |
| 29  | Have interest in the workers                                       | 4.43 | 0.72 | Required |
| 30  | Be self control and discipline in the discharge of duty            | 4.58 | 0.57 | Required |
| 31  | Adapt to new changes as technology and society is dynamic          | 4.26 | 0.66 | Required |
| 32  | Have interest in work  | 4.26 | 0.74 | Required |
| 33  | Set goals for the organization                                     | 3.51 | 0.67 | Required |
| 34  | Judge the performances of employees                                | 4.34 | 0.64 | Required |
| 35  | Be focus driven externally   | 4.31 | 0.68 | Required |
| 36  | Maintain good personal appearance/neatness                         | 3.50 | 0.75 | Required |
| 37  | Foster creativity in the enterprise                                | 4.37 | 0.76 | Required |

The data presented in Table 2 revealed that 17 general personal attributes have their Mean values ranged from 3.50 to 4.58. This showed that the Mean value of each item was above the cut-off point of 3.50, indicating that all the 17 general personal attributes were required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The table also showed that the standard deviations (SD) of the items were within the range of 0.64 to 0.80, this

indicated that the responses of the respondents were not different from one another in their responses.

### **Research Question 3**

What are the Financial Competencies required by Technical College Refrigeration and Air - Conditioning graduates for the establishment of Small and Medium scale Enterprises?

The data for answering research question 3 are presented in Table 3

**Table 3**

**Mean Responses of the Respondents on the Financial Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises N = 97**

| <b>S/N</b> | <b>Item statements</b>                   | <b>Mean</b> | <b>S.D</b> | <b>Remarks</b> |
|------------|--|-------------|------------|----------------|
| 38         | Estimate construction materials          | 3.62        | 0.77       | Required       |
| 39         | Interpret financial statement            | 4.19        | 0.83       | Required       |
| 40         | Facilitate auditing of finances          | 4.24        | 0.75       | Required       |
| 41         | Facilitate auditing of resources         | 4.43        | 0.70       | Required       |
| 42         | Control income outgoing finances         | 4.31        | 0.74       | Required       |
| 43         | Control outgoing finances                | 3.63        | 0.63       | Required       |
| 44         | Manage money properly                    | 4.40        | 0.71       | Required       |
| 45         | Understand payroll and various deduction | 3.38        | 0.72       | Required       |
| 46         | Prepare financial statement              | 4.42        | 0.71       | Required       |
| 47         | Keep proper records of all transactions  | 4.22        | 0.70       | Required       |
| 48         | Budget for product execution             | 3.74        | 0.76       | Required       |

The data presented in Table 3 revealed that 11 financial competencies have their Mean values ranged from 3.62 to 4.43. This showed that the Mean value of each item

was above the cut-off point of 3.50, indicating that all the 11 financial competencies were required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The Table also showed that the standard deviations (SD) of the items were within the range of 0.63 to 0.83, this indicated that the Mean values of the respondents were not far from one another in their responses.

#### Research Question 4

What are the Marketing Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the establishment of Small and Medium scale Enterprises?

The data for answering research question 4 are presented in Table 4

**Table 4**

**Mean Responses of the Respondents on the Marketing Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises** N = 97

| S/N | Item statements  | Mean | S.D  | Remarks  |
|-----|--|------|------|----------|
| 49  | Device strategies for profit making                          | 4.31 | 0.81 | Required |
| 50  | Identify customers needs                                     | 4.29 | 0.80 | Required |
| 51  | Advertise products/services to customers                     | 4.43 | 0.76 | Required |
| 52  | Advertise products for sell through appropriate media        | 4.30 | 0.74 | Required |
| 53  | Determine availability of goods/raw materials for production | 3.81 | 0.75 | Required |
| 54  | Collect market information about current prices              | 3.90 | 0.72 | Required |
| 55  | Have knowledge of buying situation                           | 4.26 | 0.71 | Required |
| 56  | Determine factors /strength of competition                   | 3.72 | 0.74 | Required |
| 57  | Organize sales promotion to motivate customers               | 4.34 | 0.67 | Required |
| 58  | Identify channel of goods distribution                       | 4.31 | 0.68 | Required |
| 59  | Define the right products to meet customer needs             | 4.27 | 0.74 | Required |
| 60  | Define the right service to meet customer needs              | 3.60 | 0.72 | Required |

The data presented in Table 4 revealed that 12 marketing competencies have their Mean values ranged from 3.60 to 4.43. This showed that the Mean value of each item was above the cut-off point of 3.50, indicating that all the 12 marketing competencies were required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The Table also showed that the

standard deviations (SD) of the items were within the range of 0.61 to 0.81, this indicated that the responses of the respondents were not harmonious.

## Research Question 5

What are the Managerial competencies required by technical college refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises?

The data for answering research question 5 are presented in Table 5

**Table 5**

**Mean Responses of the Respondents on the Managerial Competencies required by Technical College Refrigeration and Air Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises** **N = 97**

| S/N | Item statements   | Mean | S.D  | Remarks  |
|-----|---|------|------|----------|
| 61  | Control and direct authority  | 3.63 | 0.71 | Required |
| 62  | Delegate authority  | 4.20 | 0.77 | Required |
| 63  | Evaluate all activities /operations in the process of goal attainment | 4.24 | 0.77 | Required |
| 64  | Set a channel for effective feedback from customers                   | 3.80 | 0.77 | Required |
| 65  | Manage time and meet job schedule                                     | 4.38 | 0.74 | Required |
| 66  | Handle difficult customers with patience                              | 3.65 | 0.81 | Required |
| 67  | Handle difficult customers with care                                  | 4.28 | 0.74 | Required |
| 68  | Develop organization policies   | 4.24 | 0.72 | Required |
| 69  | interpret organization policies                                       | 3.54 | 0.70 | Required |
| 70  | Implement organization policies                                       | 4.24 | 0.81 | Required |
| 71  | Create long term vision for the organization                          | 4.23 | 0.81 | Required |
| 72  | Create an open door policy  | 3.92 | 0.79 | Required |
| 73  | Foster relationship among members of the organization                 | 4.38 | 0.79 | Required |
| 74  | Have knowledge of need for employee growth and development            | 3.52 | 0.81 | Required |
| 75  | Appraise employees performance  | 4.24 | 0.86 | Required |
| 76  | Be sensitive to the feeling of others                                 | 4.32 | 0.82 | Required |
| 77  | Repair demanded items before collection date                          | 3.81 | 0.84 | Required |
| 78  | Manage time schedule  | 4.13 | 0.86 | Required |
| 79  | Manage job schedule   | 3.96 | 0.90 | Required |
| 80  | Appraise job performance  | 4.29 | 0.85 | Required |
| 81  | Set attainable goals for the organization                             | 3.69 | 0.60 | Required |



The data presented in Table 5 revealed that 21 managerial competencies have their Mean values ranged from 3.52 to 4.38. This showed that the Mean value of each item was above the cut-off point of 3.50, indicating that all the 21 managerial competencies were required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The Table also showed that the standard deviations (SD) of the items were within the range of 0.60 to 0.90, this indicated that there was agreement in the opinions of the respondents.

## **Testing of Hypotheses**

### **Hypothesis 1**

There is no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on technical competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

**Table 6**

**The t-test Analysis of the Mean Responses of the Respondents on the Technical Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium scale Enterprises**

| S/N | Item statements  | $X_1$ | $S_1^2$ | $X_2$ | $S_2^2$ | t-cal | Remarks |
|-----|--|-------|---------|-------|---------|-------|---------|
| 1   | Operate brazing equipment properly   | 4.68  | 0.74    | 4.73  | 0.50    | 0.32  | NS      |
| 2   | Use charging trolling accurately   | 4.73  | 0.45    | 4.53  | 0.57    | 1.40  | NS      |
| 3   | Skillfully cut copper pipe by using tube cutter and hacksaw  | 4.47  | 0.84    | 4.46  | 0.63    | .070  | NS      |
| 4   | Use leak detector instruments to detect leaks in refrigeration and air conditioning equipment accurately | 4.73  | 0.65    | 4.34  | 0.66    | 0.24  | NS      |
| 5   | Use different types of bending tools to bend copper pipes appropriately                                  | 4.73  | 0.45    | 4.57  | 0.65    | 1.00  | NS      |
| 6   | Have skills in accuracy and neatness in brazing joints   | 4.57  | 0.50    | 4.44  | 0.69    | 0.76  | NS      |
| 7   | Have high knowledge of mathematics to calculate and estimate cost of materials and production            | 4.52  | 0.61    | 4.37  | 0.72    | 0.85  | NS      |
| 8   | Skillfully and properly swaging and flaring of copper tube   | 4.42  | 0.60    | 4.39  | 0.70    | 0.13  | NS      |
| 9   | Maintain good quality of work  | 4.57  | 0.50    | 4.35  | 0.64    | 1.38  | NS      |
| 10  | Maintain available tools and equipment   | 4.57  | 0.76    | 4.32  | 0.74    | 1.34  | NS      |
| 11  | Have high knowledge on basic electricity principles  | 4.52  | 0.96    | 4.28  | 0.71    | 1.23  | NS      |
| 12  | Have high knowledge on refrigeration and air conditioning principles                                     | 4.89  | 0.31    | 4.60  | 0.58    | 0.45  | NS      |
| 13  | Remove, clean and fix air conditioner filter appropriately   | 4.47  | 0.61    | 4.30  | 0.56    | 1.12  | NS      |
| 14  | Use appropriate refrigerant for appropriate equipment  | 4.42  | 0.83    | 4.29  | 0.66    | 0.70  | NS      |
| 15  | Remove and replace drier accurately  | 4.68  | 0.47    | 4.20  | 0.70    | 0.94  | NS      |
| 16  | Diagnose electrical fault and amend appropriately  | 4.21  | 0.91    | 4.35  | 0.62    | -0.84 | NS      |
| 17  | Install air conditioner, window and split unit accurately  | 4.36  | 0.59    | 4.37  | 0.64    | -0.02 | NS      |
| 18  | Remove, clean, repair or replace the compressor appropriately  | 4.78  | 0.53    | 4.55  | 0.65    | 1.39  | NS      |
| 19  | Remove, clean, repair or replace the condenser appropriately   | 4.73  | 0.45    | 4.28  | 0.62    | 0.87  | NS      |
| 20  | Remove, clean, repair or replace the evacuator appropriately   | 4.57  | 0.66    | 4.43  | 0.63    | 0.88  | NS      |

**Key:**  $S_1^2$  = Variance of teachers/instructors of refrigerators and air- conditioning  
 $S_2^2$  = Variance of craftsmen/technicians of refrigeration and air- conditioning  
 $X_1$  = Mean of teachers/instructors of refrigerators and air- conditioning  
 $X_2$  = Mean of craftsmen/technicians of refrigeration and air- conditioning  
 $Df = 95$   
 $P = 0.05$

$$T_{tab} = 1.96$$

*SG = Significant*

*NS = Not Significant*

Data presented in Table 6 revealed that each of the 20 technical competencies had their calculated t- values ranged from 0.02 to 1.40 which were less than t-table value of 1.98 at 0.05 level of significance and at 95 degree of freedom (df). This indicated that there was no significant difference in the mean responses of the teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on technical competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.

Therefore, the null hypothesis of no significant difference in the Mean response of teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on technical competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises was upheld.

## **Hypothesis 2**

There is no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on general personal attributes required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.



**Table 7**

**The t-test Analysis of the Mean Responses of the Respondents on the General Personal Attributes required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises**

| S/N | Item statements  | $X_1$ | $S^2_1$ | $X_2$ | $S^2_2$ | t-cal | Remarks |
|-----|--|-------|---------|-------|---------|-------|---------|
| 21  | Endure difficulties in the process of nurturing the enterprise     | 4.42  | 0.60    | 4.23  | 0.68    | 1.11  | NS      |
| 22  | Take risk in the enterprise  | 4.52  | 0.51    | 4.24  | 0.66    | 0.09  | NS      |
| 23  | Maintain good relationship with the community                      | 4.47  | 0.61    | 4.26  | 0.78    | 1.05  | NS      |
| 24  | Maintain good relationship with client                             | 4.57  | 0.69    | 4.21  | 0.81    | 0.01  | NS      |
| 25  | Have a sense of sympathy to customers in terms of damages or loses | 4.63  | 0.49    | 4.33  | 0.69    | 1.31  | NS      |
| 26  | Have respect of the right of other workers                         | 4.84  | 0.37    | 4.52  | 0.59    | 0.43  | NS      |
| 27  | Foster good human relationship both outside the firm and within    | 4.52  | 0.51    | 4.29  | 0.72    | 1.09  | NS      |
| 28  | Have a sense of responsibility                                     | 4.68  | 0.47    | 4.30  | 0.82    | 0.62  | NS      |
| 29  | Have interest in the workers                                       | 4.63  | 0.49    | 4.38  | 0.75    | 1.60  | NS      |
| 30  | Be self control and discipline in the discharge of duty            | 4.73  | 0.45    | 4.55  | 0.59    | 1.27  | NS      |
| 31  | Adapt to new changes as technology and society is dynamic          | 4.42  | 0.50    | 4.23  | 0.70    | 0.62  | NS      |
| 32  | Have interest in work  | 4.42  | 0.60    | 4.23  | 0.77    | 0.94  | NS      |
| 33  | Set goals for the organization                                     | 4.78  | 0.41    | 4.44  | 0.71    | 1.06  | NS      |
| 34  | Judge the performances of employees                                | 4.57  | 0.50    | 4.28  | 0.66    | 0.23  | NS      |
| 35  | Be focus driven externally   | 4.47  | 0.51    | 4.28  | 0.71    | 1.09  | NS      |
| 36  | Maintain good personal appearance/neatness                         | 4.57  | 0.60    | 4.17  | 0.76    | 1.00  | NS      |
| 37  | Foster creativity in the enterprise                                | 4.78  | 0.41    | 4.26  | 0.80    | 1.01  | NS      |

Data presented in Table 7 revealed that each of the 17 general personal attributes had their calculated t- values ranged from 0.01 to 1.60 which were less than t-table value of 1.98 at 0.05 level of significance and at 95 degree of freedom (df). This indicated that there was no significant difference in the mean responses of the teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on general personal

attributes required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.

Therefore, the null hypothesis of no significant difference in the Mean response of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on general personal attributes required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises was upheld.

### Hypothesis 3

There is no significant difference between the mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on financial competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.

**Table 8**

#### **The t-test Analysis of the Mean Responses of the Respondents on the Financial Competencies required by Technical College Refrigeration and Air -Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises**

| S/N | Item statements                  | $X_1$ | $S_1^2$ | $X_2$ | $S_2^2$ | t-cal | Remarks |
|-----|----------------------------------|-------|---------|-------|---------|-------|---------|
| 38  | Estimate construction materials  | 4.57  | 0.50    | 4.14  | 0.80    | 0.78  | NS      |
| 39  | Interpret financial statement    | 4.42  | 0.83    | 4.14  | 0.83    | 1.51  | NS      |
| 40  | Facilitate auditing of finances  | 4.52  | 0.61    | 4.17  | 0.76    | 0.41  | NS      |
| 41  | Facilitate auditing of resources | 4.73  | 0.45    | 4.35  | 0.73    | 0.20  | NS      |
| 42  | Control income outgoing finances | 4.63  | 0.49    | 4.24  | 0.77    | 0.36  | NS      |
| 43  | Control outgoing finances        | 4.84  | 0.37    | 4.58  | 0.67    | 0.34  | NS      |
| 44  | Manage money properly            | 4.68  | 0.47    | 4.33  | 0.75    | 0.50  | NS      |

|    |  |      |      |      |      |      |    |
|----|--|------|------|------|------|------|----|
| 45 | Understand payroll and various deduction | 4.68 | 0.47 | 4.30 | 0.76 | 1.55 | NS |
| 46 | Prepare financial statement              | 4.63 | 0.59 | 4.37 | 0.74 | 1.50 | NS |
| 47 | Keep proper records of all transactions  | 4.47 | 0.69 | 4.19 | 0.70 | 1.62 | NS |
| 48 | Budget for product execution             | 4.36 | 0.68 | 4.21 | 0.78 | 0.22 | NS |

Data presented in Table 8 revealed that each of the 11 financial competencies had their calculated t- values ranged from 0.22 to 1.62 which were less than t-table value of 1.98 at 0.05 level of significance and at 95 degree of freedom (df). This indicated that there was no significant difference in the Mean responses of the teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on financial competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.

Therefore, the null hypothesis of no significant difference in the Mean response of teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on financial competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises was upheld.

#### **Hypothesis 4**

There is no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on marketing

competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.



**Table 9****The t-test Analysis of the Mean Responses of the Respondents on the Marketing Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises**

| S/N | Item statements  | $X_1$ | $S_1^2$ | $X^2$ | $S_2^2$ | t-cal | Remarks |
|-----|--|-------|---------|-------|---------|-------|---------|
| 49  | Device strategies for profit making                          | 4.47  | 0.69    | 4.28  | 0.86    | 0.92  | NS      |
| 50  | Identify customers needs                                     | 4.36  | 0.59    | 4.22  | 0.85    | 0.41  | NS      |
| 51  | Advertise products/services to customers                     | 4.84  | 0.37    | 4.33  | 0.80    | 1.60  | NS      |
| 52  | Advertise products for sell through appropriate media        | 4.63  | 0.49    | 4.23  | 0.77    | 1.51  | NS      |
| 53  | Determine availability of goods/raw materials for production | 4.84  | 0.37    | 4.26  | 0.78    | 0.38  | NS      |
| 54  | Collect market information about current prices              | 4.78  | 0.41    | 4.42  | 0.76    | 1.08  | NS      |
| 55  | Have knowledge of buying situation                           | 4.52  | 0.61    | 4.20  | 0.72    | 0.19  | NS      |
| 56  | Determine factors /strength of competition                   | 4.63  | 0.59    | 4.19  | 0.75    | 0.59  | NS      |
| 57  | Organize sales promotion to motivate customers               | 4.68  | 0.58    | 4.25  | 0.67    | 0.97  | NS      |
| 58  | Identify channel of goods distribution                       | 4.57  | 0.50    | 4.25  | 0.71    | 0.31  | NS      |
| 59  | Define the right products to meet customer needs             | 4.68  | 0.47    | 4.17  | 0.76    | 0.38  | NS      |
| 60  | Define the right service to meet customer needs              | 4.57  | 0.50    | 3.88  | 0.75    | 1.21  | NS      |

Data presented in Table 9 revealed that each of the 12 marketing competencies had their calculated t- values ranged from 0.31 to 1.60 which were less than t-table value of 1.98 at 0.05 level of significance and at 95 degree of freedom (df). This indicated that there was no significant difference in the Mean responses of the teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on marketing competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

Therefore, the null hypothesis of no significant difference in the Mean response of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on marketing competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises was upheld.

### **Hypothesis 5**

There is no significant difference between the mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on managerial competencies required by technical college refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

**Table 10**

**The t-test Analysis of the Mean Responses of the Respondents on the Managerial Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for the Establishment of Small and Medium Scale Enterprises**

| S/N | Item statements   | X <sub>1</sub> | S <sub>1</sub> <sup>2</sup> | X <sub>2</sub> | S <sub>2</sub> <sup>2</sup> | t- cal | Remarks |
|-----|---|----------------|-----------------------------|----------------|-----------------------------|--------|---------|
| 61  | Control and direct authority  | 4.52           | 0.61                        | 4.20           | 0.72                        | 1.18   | NS      |
| 62  | Delegate authority  | 4.47           | 0.51                        | 4.14           | 0.81                        | 0.80   | NS      |
| 63  | Evaluate all activities /operations in the process of goal attainment | 4.47           | 0.69                        | 4.19           | 0.79                        | 1.02   | NS      |
| 64  | Set a channel for effective feedback from customers                   | 4.63           | 0.95                        | 4.44           | 0.73                        | 0.83   | NS      |
| 65  | Manage time and meet job schedule                                     | 4.63           | 0.49                        | 4.32           | 0.78                        | 1.74   | NS      |
| 66  | Handle difficult customers with patience                              | 4.57           | 0.50                        | 4.19           | 0.85                        | 0.55   | NS      |
| 67  | Handle difficult customers with care                                  | 4.47           | 0.61                        | 4.24           | 0.77                        | 0.21   | NS      |
| 68  | Develop organization policies   | 4.42           | 0.50                        | 4.20           | 0.76                        | 0.57   | NS      |
| 69  | interpret organization policies                                       | 4.63           | 0.49                        | 4.39           | 0.74                        | 0.61   | NS      |
| 70  | Implement organization policies                                       | 4.57           | 0.606                       | 4.66           | 0.84                        | 1.35   | NS      |
| 71  | Create long term vision for the organization                          | 4.63           | 0.68                        | 4.14           | 0.81                        | 0.45   | NS      |
| 72  | Create an open door policy  | 4.68           | 0.58                        | 4.20           | 0.81                        | 0.50   | NS      |
| 73  | Foster relationship among members of the organization                 | 4.78           | 0.415                       | 4.28           | 0.83                        | 0.57   | NS      |
| 74  | Have knowledge of need for employee growth and development            | 4.57           | 0.50                        | 4.12           | 0.85                        | 1.10   | NS      |
| 75  | Appraise employees performance  | 4.57           | 0.50                        | 4.16           | 0.91                        | 0.42   | NS      |
| 76  | Be sensitive to the feeling of others                                 | 4.63           | 0.68                        | 4.25           | 0.84                        | 1.03   | NS      |
| 77  | Repair demanded items before collection date                          | 4.52           | 0.69                        | 4.23           | 0.86                        | 0.57   | NS      |
| 78  | Manage time schedule  | 4.15           | 0.76                        | 4.12           | 0.88                        | 0.76   | NS      |
| 79  | Manage job schedule   | 4.57           | 0.76                        | 4.23           | 0.92                        | 1.39   | NS      |
| 80  | Appraise job performance  | 4.47           | 0.77                        | 4.25           | 0.87                        | 0.99   | NS      |
| 81  | Set attainable goals for the organization                             | 4.84           | 0.37                        | 4.65           | 0.64                        | 0.80   | NS      |

Data presented in Table 10 revealed that each of the 21 managerial competencies had their calculated t- values ranged from 0.21 to 1.39 which were less than t-table value of 1.98 at 0.05 level of significance and at 95 degree of freedom (df). This indicated that there was no significant difference in the Mean responses of the teachers/instructors of

refrigerators and air - conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on managerial competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

Therefore, the null hypothesis of no significant difference in the mean response of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on managerial competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises was upheld.

### **Findings of the Study**

The following findings emerged from the study:

**A. The following technical competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises**

1. Operate brazing equipment properly
2. Use charging trolling accurately
3. Skillfully cut copper pipe by using tube cutter and hacksaw
4. Use leak detector instruments to detect leaks in refrigeration and air conditioning equipment accurately
5. Use different types of bending tools to bend copper pipes appropriately
6. Have skills in accuracy and neatness in brazing joints
7. Have high knowledge of mathematics to calculate and estimate cost of materials and production

8. Skillfully and properly swaging and flaring of copper tube
9. Maintain good quality of work
10. Maintain available tools and equipment
11. Have high knowledge on basic electricity principles
12. Have high knowledge on refrigeration and air conditioning principles
13. Remove, clean and fix air conditioner filter appropriately
14. Use appropriate refrigerant for appropriate equipment
15. Remove and replace drier accurately
16. Diagnose electrical fault and amend appropriately
17. Install air conditioner, window and split unit accurately
18. Remove, clean, repair or replace the compressor appropriately
19. Remove, clean, repair or replace the condenser appropriately
20. Remove, clean, repair or replace the evacuator appropriately

**A. The following general personal attributes are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises**

1. Endure difficulties in the process of nurturing the enterprise
2. Take risk in the enterprise
3. Maintain good relationship with the community
4. Maintain good relationship with client
5. Have a sense of sympathy to customers in terms of damages or loses
6. Have respect of the right of other workers
7. Foster good human relationship both outside the firm and within

8. Have a sense of responsibility
9. Have interest in the workers
10. Be self control and discipline in the discharge of duty
11. Adapt to new changes as technology and society is dynamic
12. Have interest in work
13. Set goals for the organization
14. Judge the performances of employees
15. Be focus driven externally
16. Maintain good personal appearance/neatness
17. Foster creativity in the enterprise

**A. The following financial competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises**

1. Estimate construction materials
2. Interpret financial statement
3. Facilitate auditing of finances
4. Facilitate auditing of resources
5. Control income outgoing finances
6. Control outgoing finances
7. Manage money properly
8. Understand payroll and various deduction
9. Prepare financial statement
10. Keep proper records of all transactions

11. Budget for product execution

**A. The following marketing competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises**

1. Device strategies for profit making
2. Identify customers needs
3. Advertise products/services to customers
4. Advertise products for sell through appropriate media
5. Determine availability of goods/raw materials for production
6. Collect market information about current prices
7. Have knowledge of buying situation
8. Determine factors /strength of competition
9. Organize sales promotion to motivate customers
10. Identify channel of goods distribution
11. Define the right products to meet customer needs
12. Define the right service to meet customer needs

**A. The following managerial competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises**

1. Control and direct authority
2. Delegate authority
3. Evaluate all activities /operations in the process of goal attainment
4. Set a channel for effective feedback from customers

5. Manage time and meet job schedule
6. Handle difficult customers with patience
7. Handle difficult customers with care
8. Develop organization policies
9. interpret organization policies
10. Implement organization policies
11. Create long term vision for the organization
12. Create an open door policy
13. Foster relationship among members of the organization
14. Have knowledge of need for employee growth and development
15. Appraise employees performance
16. Be sensitive to the feeling of others
17. Repair demanded items before collection date
18. Manage time schedule
19. Manage job schedule
20. Appraise job performance
21. Set attainable goals for the organization

### **Research Question 1**

What are the technical competencies required by Technical College Refrigeration and Air - Conditioning graduates for the establishment of small and medium scale enterprises?



## **Research Question 2**

What are the general personal attributes required by Technical College Refrigeration and Air - Conditioning graduates for the establishment of small and medium scale enterprises?

## **Research Question 3**

What are the financial competencies required by Technical College Refrigeration and Air - Conditioning graduates for the establishment of small and medium scale enterprises?

## **Research Question 4**

What are the marketing competencies required by Technical College Refrigeration and Air - Conditioning graduates for the establishment of small and medium scale enterprises?

## **Research Question 5**

What are the managerial competencies required by Technical College Refrigeration and Air - Conditioning graduates for establishing small and medium scale enterprises?

### **Hypothesis 1**

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on technical competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

### **Hypothesis 2**

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on general personal attributes required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

### **Hypothesis 3**

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on financial competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

### **Hypothesis 4**

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-

conditioning craftsmen/technicians of small and medium scale enterprises on marketing competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

### **Hypothesis 5**

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on managerial competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

### **Discussion of Findings**

The findings of this study revealed that 20 technical competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. These technical competencies include: operate brazing equipment properly, use charging trolling accurately, skillfully cut copper pipe by using tube cutter and hacksaw, use leak detector instruments to detect leaks in refrigeration and air conditioning equipment accurately, use different types of bending tools to bend copper pipes appropriately, have skills in accuracy and neatness in brazing joints, and high knowledge of mathematics to calculate and estimate cost of materials and production. These findings were in agreement with the opinion of Lidima (2011) that technical competencies are required for establishing any occupational form of small and medium scale enterprises.

The findings of this study revealed that 17 general personal attributes are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. These attributes include: maintain good relationship with client, have a sense of sympathy to customers in terms of damages or loses, have respect of the right of other workers, foster good human relationship both outside the firm and within, have a sense of responsibility, have interest in the workers, be self control and discipline in the discharge of duty, adapt to new changes as technology and society is dynamic, have interest in work and set goals for the organization. These findings were in line with the opinion of Amitabh (2009) that medium and small entrepreneurs are most likely to do well if they maintain good relationship with client, self confident, hard workers, goal setters, accountable and have respect of the right of other workers.

The findings of this study revealed that 11 financial competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. These competencies include: estimate construction materials, interpret financial statement, facilitate auditing of finances, facilitate auditing of resources, control income outgoing finances, control outgoing finances, manage money properly and understand payroll and various deduction. These findings were in line with the opinion of Anyakoha (2009) that medium and small scale business operators should be able to prepare financial statement and keep proper records of all transactions for the prosper of their businesses.

The findings of this study revealed that 11 marketing competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. These competencies include: device strategies for profit making, identify customers needs, advertise products/services to customers, advertise products for sell through appropriate media, determine availability of goods/raw materials for production, collect market information about current prices, have knowledge of buying situation, determine factors /strength of competition and organize sales promotion to motivate customers. These findings were in agreement with the opinion of Aminu (2009) that successful entrepreneur should be able to identify their customersø needs and advertise products/services to customers for maximum patronage.

The findings of this study revealed that 21 managerial competencies are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. These competencies include: control and direct authority, delegate authority, evaluate all activities /operations in the process of goal attainment, set a channel for effective feedback from customers, manage time and meet job schedule, handle difficult customers with patience, handle difficult customers with care, develop organization policies, interpret organization policies and implement organization policies. These findings were in agreement with the opinion of William (2005) that small and medium scale entrepreneurs should be able to evaluate all activities /operations in the process of goal attainment and set a channel for effective feedback from customers.

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on technical competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. The implication of the finding is that the profession of the respondents did not significantly affect their opinions on each item.

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on general personal attributes required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The implication of the finding may also be attributed to the fact that all the general personal attributes are required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises.

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air- conditioning craftsmen/technicians of small and medium scale enterprises on financial competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises. The implication of

the finding is that the qualifications of the respondents did not significantly affect their opinions on each item.

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air- conditioning and refrigeration and air - conditioning craftsmen/technicians of small and medium scale enterprises on marketing competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The implication of the finding is that the years of experience of the respondents did not significantly affect their opinions on each item.

There was no significant difference between the Mean responses of teachers/instructors of refrigerators and air - conditioning and refrigeration and air-conditioning craftsmen/technicians of small and medium scale enterprises on managerial competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises. The implication of the finding is that the profession of the respondents did not significantly affect their opinions on each item.

## **CHAPTER V**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

This chapter contains the re-statement of the problem, summary of procedure used, the principal findings of the study, implications of the study, conclusion, recommendations and the suggestions further study.

#### **Restatement of the Problem**

The problem of this study therefore is too identify entrepreneurial competencies required by Technical College refrigeration and air - conditioning graduates to set up small and medium scale enterprises in Federal Capital Territory.

Specifically the study determined;

- Technical competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises
- General personal attributes required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises
- Financial competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises



- Marketing competencies required by Technical College refrigeration and air - conditioning graduates for the establishment of small and medium scale enterprises
- Managerial competencies required by Technical College refrigeration and air conditioning graduates for the establishment of small and medium scale enterprises.

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### **Summary of the Procedure Used**

The study employed a descriptive survey research design. The population for the study was 97 consisting teachers/instructors in the one Technical Colleges and one Vocational Centre and registered refrigeration and air - conditioning craftsmen/technicians small and medium scale enterprises in Federal Capital Territory. A questionnaire consisting of 81 items was developed and used for data collection. The instrument for this study was subjected to face validity by three experts, from the Department of Vocational Teacher Education, University of Nigeria, Nsukka.

The validates were asked to scrutinize each item of the questionnaire and delete irrelevant ones from the questionnaire. The observations and suggestions of the validates were used in the final draft of the instrument. The Cronbach Alpha coefficient method was used to determine the internal consistency of the instrument and the instrument yielded a reliability Coefficient of 0.96. A total of 97 copies of the questionnaire were administered on the respondents in their various locations by the researcher and with the aid of three research assistants. The completed questionnaires were collected after the

interval of two hours. The data collected were analyzed using Mean for answering the five research questions while t-test was used for testing five null hypotheses at 0.05 level of significance.

## **Major Findings**

Based on the data analyzed, it was found out from the study that Technical College refrigeration and air - conditioning graduates required:

- Twenty technical competencies for establishing small and medium scale enterprises in Federal Capital Territory
- Seventeen general personal attributes for establishing small and medium scale enterprises in Federal Capital Territory
- Eleven financial competencies for the establishment of small and medium scale enterprises in Federal Capital Territory
- Twelve marketing competencies for establishing small and medium scale enterprises in Federal Capital Territory
- Twenty one managerial competencies for establishing small and medium scale enterprises in Federal Capital Territory.

## **Implication of the findings**

The findings of the study had implication for Federal Capital Territory Administration and Agency of Science and Technology Abuja, National Board for Technical Education (NBTE), National Business and Technical Examination Board

(NABTEB), Federal and State Ministries of Education, Vocational and Technical Education, Teachers, Students, Parents and Society.

From the results of the study it implies that:

- Federal Capital Territory Administration , Agency for Science and Technology Abuja, Federal and State Ministries of Education will be compel to use the study as a reference material during procurement of instructional materials, inspection and supervision by ensuring and insisting that those identified competencies are taught. Workshops, seminars, conferences and short time courses for teachers on the entrepreneurial competencies required by Technical College refrigeration and air conditioning graduates for the establishment small and medium scale enterprises in Federal Capital Territory will also be organized.
- National Board for Technical Education (NBTE) as a quality control body will be force to in cooperate the identified competencies in the curriculum; programmes/modules that can enhance entrepreneurial competencies of Technical College graduates of refrigeration and air - conditioning to enable them to establish SMEs.
- National Business and Technical Examination Board (NABTEB) as an examining body will be compel to in cooperate the identified competencies in their examination questions for entrepreneurial ventures.

- Vocational and Technical Education will have a new look as the identified entrepreneurial competencies will be incorporated in the curriculum. The new innovation will turn out productive graduates.
- Refrigeration and air conditioning teachers will learn how to write textbooks on technical, general personal attributes, financial, marketing and managerial competencies required by Technical College refrigeration and air conditioning graduates for the establishment small and medium scale enterprises
- Refrigeration and air conditioning graduates from Technical Colleges will also see it necessary to learn about the identified competencies for establishment small and medium scale enterprises.
- Parents' economy will be forced to change positively as Technical College refrigeration and air - conditioning graduates contribute to the income of the family with the identified competencies.
- The society will be forced to improve by the competent services rendered by the Technical College refrigeration and air - conditioning graduates thus reducing unemployment.

## **Conclusion**

Based on the findings of the study, the following conclusions were drawn:

It is concluded that the identified entrepreneurial competencies should be incorporated in the curriculum of Technical Colleges. The identified competencies should be used for procurement of instructional materials/equipment and training of refrigeration

and air conditioning Technical College teachers/instructors in order to turn out graduates that will embark on small and medium scale enterprise thus reduce unemployment. Lack of entrepreneurial competencies by these graduates has resulted to a situation whereby most of the graduates hope solely on employment which is not forthcoming. They will be able to establish their own business/workshop if they possess entrepreneurial competencies in refrigeration and air - conditioning.

### **Recommendations**

Based on the findings of the study, the following recommendations were made:

- ❖ The identified Technical, General Personal Attributes, Financial, Marketing and Managerial Competencies for establishing small and medium scale enterprises should be integrated into the curriculum of Technical Colleges.
- ❖ Well qualified and experienced teachers should be employed to teach refrigeration and air - conditioning to students in Technical Colleges.
- ❖ Relevant tools and equipment for teaching should be supplied to various Technical Colleges where refrigeration and air - conditioning is offered.
- ❖ Federal Ministry of Education, States, Federal Capital Territory Administrations, Government Agencies and Administrators of Technical Colleges should organize seminar, workshop and in-service training for refrigeration and air - conditioning teachers on entrepreneurial competencies required by Technical College refrigeration and air - conditioning graduates for establishment small and medium

scale enterprises. This will enable the teachers to effectively teach the required competencies to students for self employment after graduation.

### **Suggestion for further Study**

The following are suggested for further studies:

1. Entrepreneurial Competencies required by Technical College Refrigeration and Air - Conditioning Graduates for establishment Small and Medium scale Enterprises studies should be conducted in each State of the Federation.
2. A similar study should be conducted in other Technical and Vocational areas such as Woodwork, Electrical/Electronics, Building Technology, Automobile Technology, Agriculture, Home Economics, Computer Education and Business Education in Technical Colleges and Tertiary Institutions.
3. Self employability skills required by Technical College Electrical Installation graduates for establishment small and medium scale enterprises in Federal Capital Territory.
4. Capacity building needs of teachers for effective teaching of refrigeration and air conditioning to students in Technical Colleges in Federal Capital Territory.

### **References**

- Achilike, A. N. And Okwuanaso, S. L. (2004) Competencies expected of National Diploma Accounting Graduates of Polytechnics as Perceived by Employer of Labour. *Journal of Business and Office Education*, 1 (2) 43.
- Agomuo, E. E, and Ibezin, N. E, (2008) University Academic Staff Perception of Entrepreneurship Managerial and E- Business skills needed for Effective Retirement Preparation. *Journal of Educational Foundations*.5 (1) 107-115.
- Akinseinde, S. I. (2010) *Challenges and Direction in Making Vocational Technical Education Job Demand – Driven in Contemporary Nigeria*. A lead paper presented at the 2010 Annual Conference of the Nigeria Vocational Association (NVA) held at the University of Nigeria, Nsukka. 28<sup>th</sup> to 31<sup>st</sup> July 2010.
- Akombi, N.L (2001). Entrepreneurship in Accountancy and Book-keeping Indispensible Fools for the Growth of Small Scale Enterprise in Nigeria. *Journal of Science and Computer Education*, 1(3) 137-144.
- Alio, C. B (2006) *Strategies for Enhancing the Competencies of Electronics Craftsmen in the Informal Sector of the Economy of Enugu State*. Ph.D Thesis University of Nigeria Nsukka.
- Allu, E. F (2006) *Work Competencies Needed by Technical College Metalwork Graduates for Entrance into Private Enterprises* unpublished First Degree Thesis. Department of Vocational and Technology Education. Federal University of Technology Minna.
- Alos, A. (2004) *Industrialization and Entrepreneurship: Strategies and Lesson*. A Conference paper at the world Conference on SMEs Abuja. July 2004.
- Aminu, A. A. (2009) *Entrepreneurship Theory and Practice*. Maiduguri. Campaq. Publishers Limited.
- Anyakoha, E. U (1997) *Vocational and Technical Education and Power Development*. Nsukka, Nigeria. MVA & NTV Publishers.
- Anyakoha, E. U. (2009) *New Entrepreneurship Education and Wealth Creation Strategies*. Nsukka. Great AP Express Publishers Ltd.
- Centre for Advance Zonal Studies (CAZS), (2004) *Baseline Economic Survey of SME in Nigeria*. North East Zone.
- Chell E (1999) *The Entrepreneurial Personality; Past, Present and Future*; Occupational Psychologist, 38m pp. 5-12

Cohen, L. Manion, L. and Marrison, K. (2009) *Research Methods in Education. Sixth Edition*. USA and Canada. Routledge.

Concept. (n.d). In Wikipedia, The free encyclopedia Retrieved June 25<sup>th</sup>, 2011, from <http://en.wikipedia.org/wiki/Concept>

Conceptual framework. (n.d). In Wikipedia, The free encyclopedia Retrieved June 25,2011, from [http://en.wikipedia.org/wiki/Conceptual framework](http://en.wikipedia.org/wiki/Conceptual_framework).

Danga, D. (2002) Self Employment. Solution to unemployment. Survey of Existing SME in North- East Zone University of Maiduguri. *The Vocational Educational Journal; Seventh Edition*, 1, 125 - 126

Datol, I. G; Danwanzam, E; Nyapson, C. G; Padung, L, L; Udo, M. P; Bentu, S and Okwoi, R. O, (2004) *Fundamentals of Vocational – Technical Education and Entrepreneurship for Schools & Colleges*. Jos. Crest Publishers Ltd.

Eboh, E. C. (2009) *Social and Economic Research Principles and Methods*. Enugu. African Institute for Applied Economics.

Ejiofor, T. E. (2010) Work Skills Required by Secondary School Graduates for Success in Cassava Production Enterprise. *A Journal of Home Economics Research Association of Nigeria (HERAN)*, 12, 62-71.

Ekumankama, I. O, and Ukah, C. H, (2010) Promoting Entrepreneurship in Awete Fabric Production in Abia State, Nigeria. *Journal of Home Economics Research Association of Nigeria (HERAN)*, 12, 17-24.

Elobuiké, H.U. (1998). Strategies for Managing Small Scale Technical Workshops. *A paper presented at a Two-day workshop on further skills improvement for staff of EDP institution*, in Enugu State 24<sup>th</sup> -25<sup>th</sup> September. Enugu: Hotel Presidential.

Enete, A. A, Amusa, T. A, and Eze, N. M. (2009) Entrepreneurial Competency Required by Students of School of Agriculture in South Western Nigeria for Processing Cocoyam into Flour and Chips for Employment on Graduation. *A Journal of the Nigeria Vocational Association (NVA)*, 13, 11- 12

Entrepreneur. (n.d). In Wikipedia, The free encyclopedia Retrieved June 7<sup>th</sup>, 2011, from <http://en.wikipedia.org/wiki/Entrepreneur/>



Ezeji, S C. O. A. (1993) An Evaluation of Relevance of Technical Education programmes to job market needs. *International journal of Educational Research* 5, 4-13

Ezeji, S.C.O.A. (2001) *Guidance and Counselling in Education*. Nsukka. Chulbson International Press Ltd.

Federal Capital Territory. (n.d). In Wikipedia, The free encyclopedia Retrieved June 7,2011,from [http://en.wikipedia.org/wiki/Federal\\_Capital\\_Territory,\\_Nigeria#Geography](http://en.wikipedia.org/wiki/Federal_Capital_Territory,_Nigeria#Geography)

Federal Republic of Nigeria. (2004) *National Policy on Education (4<sup>th</sup> Edition)*. Lagos. Nigerian Educational Research and Development Centre Press. (NERDC).

Fishbein, M and Ajzen, I. (1975) *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research; Reading: M. A Adison Wisely*.

Framework, (n.d). Lazo group retrieved on 25/06/2011 from <http://www.lazogroup.ca/msproject/framework1-e.php/>

Gall, M.D, Gall, J.P, and Borg, W.R (2007) *Educational Research and Introduction*. U.S.A. Library of Congress Cataloging-in-publication Data.

Hisrich R. D & Peters M. P (2002) *Entrepreneurship 5<sup>th</sup> Edition*. New York. McGraw-Hill Companies Inc.

Hisrich, R. D, and Peters, M. P, (2005) *Entrepreneurship 5<sup>th</sup> Edition* .Singapore. McGraw-Hill Higher-Education.

Hornby, A.S (2006) *Oxford Advanced Learners Dictionary. 7<sup>th</sup> edition*. Oxford University Press

<http://benefitof.net/benefits-ofentrepreneurship/>Retrieved on 17-06-2011

[http://wdrs.fnal.gov/elr/competencies\\_04.pdf](http://wdrs.fnal.gov/elr/competencies_04.pdf)/Retrieved on 07-06-2011

[http://wiki.answers.com/Q/What\\_is\\_the\\_role\\_of\\_theoretical\\_framework\\_in\\_research](http://wiki.answers.com/Q/What_is_the_role_of_theoretical_framework_in_research)retrieved2011-06-26

[http://www.envisionsoftware.com/articles/Maslows\\_Needs/](http://www.envisionsoftware.com/articles/Maslows_Needs/)Retrieved on 30-06-2011.

<http://www.successinyourbusiness.com/the-relevance-of-smes-in-Nigeria/>Retrieved on 16-06-2011

<http://www.uclouvain.be/en-206332.html>retrieved/Retrieved on 21-06-2011

<http://www.unido.org/fileadmin/media/documents/pdf/Employment/UNIDO-CompetencyModel-Part1.pdf> retrieved on 2011-06-21

Igbo, C.A. (2004) *Entrepreneurship Initiatives in Colleges of Education Programmes* being a Resource Paper Presented at workshop on capacity Building for Lecturer in Colleges of Education Asaba Delta state. 11<sup>th</sup> ó 17<sup>th</sup> July.

Igbo, C.A. (2006) *Developing Entrepreneurship through Entrepreneurship Education*. Nsukka. AP Press Publisher.

Ihekwoaha, M.E. (2007) *The Entrepreneur*. Isolo. Rathmed Publishers Ltd

Khurmi, R.S, and Gupta, J.K. (2008) *A Text Book of Refrigeration and Air-Conditioning, Multicolour Illustrative Edition*. Ram Nagar, New Dehi. Eurasia publishing House (p) ltd.

Kuratko, D. F. (2009) *Introduction to Entrepreneurship*. Canada. Eighth Editon. South-Western Cengage Learning.

Lidima, B. G. (2011) *Entrepreneurial Competencies Required by Technical College Drafting Graduates for the Establishment of Small and Medium scale Enterprises in plateau state*. Unpublished M.ED Thesis University of Nigeria Nsukka.

Martin, G. And Staines, H. (1994) *Management Competencies in Small Firms*. J. Manage. Dev, 13; 23-34.

National Population Commission of Nigeria (2009). *2006 Population and Housing Census- Metadata of the Federal Republic of Nigeria*. Retrieved on 01-12-2010 from <Http://www.population.gov.ng/>

National Board for Technical Education (NBTE) (2001) *National Technical Certificate Examination (craft level) Syllabus for Engineering trades based on the NBTE Modular Curricular*. Kaduna. NBTE.

Nwanchukwu, C. E, Bakare, J.A, and Jika, F.U. (2009) *Effective Laboratory Safety Practice skills Required by Electrical and Electronics Students of Technical Colleges in Ekiti state*. A paper presented at the annual conference of Nigeria Vocational Association at Faculty of Education, University of Nigeria, Nsukka on 23<sup>rd</sup> ó 25<sup>th</sup> Nov. 2009.

- Nworgu, B.G. (2006). *Educational Research: Basic Issues and Methodology*. Owerri. wisdom publishers limited.
- Ogbazi, J. N and Okpala, J (1994) *Writing Research Report: Guide for Researchers in Education. The Social Science and the Humanities*. Enugu. Prime Time Publishers.
- Ogbuanya, T. C. and Fakorede, S. O. A. (2009) Technical Skill Improvement Needs of Metalwork Technology Teachers for Entrepreneurship in Response to MDG for Quality Assurance. *A Journal of the Nigeria Vocational Association (NVA)*, 13, 60.
- Okeke, C. A. (2002) Improving Students Skill Acquisition through Effective Clothing and textile Education in Tertiary Institutions in Anambra State. *Journal of Home Economics Research Association of Nigeria (HERAN)*, 6 (1) 84.
- Okere, A. U. And Onyechi, K. C. (2010) Entrepreneurial Skills in Pub Business for potential Retirees: Implications for Career Counselling. *Journal of Home Economics Research Association of Nigeria (HERAN)*, 12, 9-16.
- Okoli, H. J. (2009) *Preparedness of STM Teachers to Develop Entrepreneurial skills in Secondary School Students through STM Education*. Proceeding of 50<sup>th</sup> Annual Conference Science Teachers Association of Nigeria.
- Okonkwo, E.N. (2009) *Entry-level Skills Needed in Poultry Production by Senior Secondary school final year students of Agricultural Science in Aguata, Agricultural Zone of Anambra State*. M.Ed Thesis UNN
- Okorie, J. U. (2005) *Vocational Industrial Education*. Bauchi. League of publishers.
- Okorie, J.U. (2000) *Developing Nigeria's work force*. Calabar. Pace Environs Publishers.
- Okoro, F. N. (2006) Entrepreneurial Competencies Needed by Business Education Students for self- reliance: Imperative for Curriculum development. *Journal of the Home Economics Research Association of Nigeria (HERAN)*, 7, 152-157.
- Okoro, O.M (2006) *Principles and Methods in Vocational and Technical Education*. Nsukka, University Trust Publishers.
- Olabiya, O.S; Keshino, B. O; Oluwa, R; and Bashorun, O, (2009) *Managerial Skills and competencies Required by Trainees in vocational Training centres for Establishing Small and Medium scale Enterprises in Lagos State*.

- Olaitan, S. O and Ali, A. (1997) *The Making of a Curriculum (Theory, Process, Product and Evaluation)*. Onitsha. Cape Publisher Int'l Ltd.
- Olaitan, S. O; Asogwo, V. C; and Omeh, R. U, (2010) Competencies in Bee- keeping Required by Teachers of Agricultural Science for Enhancing their Income for Sustainable Living in Enugu state. *Journal of Home Economics Research Association of Nigeria (HERAN)*, 1, 148-158.
- Olaitan, S.O, Eze, S.O, and Ogbonnaya, E, (2009) Entrepreneurial Competencies Required by Secondary School Graduates for Entering in to Oil Palm Processing Enterprise in South Eastern States of Nigeria. *A Journal of the Nigeria Vocational Association (NVA)*, 13, 70-79.
- Olufunwa, A. S. (2009) Vocational and Technical Education as a Catalyst for achieving the aims of Entrepreneurship Education Programme for self-reliance. *A Journal of the Nigeria Vocational Association. Vol. 13.p. 106.*
- Oreh, C. I. (2006) Entrepreneurship and Human Resource Development. The place of Education. *Journal of Home Economics Research Association of Nigeria. (HERAN)*, 7, 159
- Osu, C. (2010) *Identification of competencies Required in Business Organization*. Unpublished Doctoral Thesis: UNN
- Osuala, E. C. (2004) *Foundation of Vocational Education*. Onitsha. Cape Publishers Int. Ltd.
- Osuala, E. C. (2009) *Business and Computer Education*. Enugu. Cheston Agency Limited.
- Osuala, E.C (2004) *Principles and Practices of Small Business Management in Nigeria*. Enugu. Cheston Agency Ltd.
- Refrigeration. (n.d). In Wikipedia, The free encyclopedia Retrieved June 6,2011, from <http://en.wikipedia.org/wiki/Refrigeration>
- Stokes, D, Wilson, N, and Mador, M. (2010) *Entrepreneurship*. Singapore. Tom Rennie.
- Stokes, D. and Wilson, N. (2002) *Small Business Management & Entrepreneurship*. Pat Bond.
- Susan, W. (2011) *Small and Medium Enterprise definition*. Retrieved on 12-06-2011 from <http://sbinfocanada.about.com/od/businessinfo/g/SME.htm>

Sweller, J. (1998) *Cognitive load during problem solving: Effect on Learning*. Cognitive Science. 12(2), 257-285

Ten competencies of an entrepreneur . (n.d). In Wikipedia, The free encyclopedia Retrieved June 3,2011, from [http://wiki.answers.com/Q/What\\_are\\_ten\\_competencies\\_of\\_an\\_entrepreneur](http://wiki.answers.com/Q/What_are_ten_competencies_of_an_entrepreneur)

Timmons, J.A. and Spinelli, S. (2004) *New Venture Creation Entrepreneurship for the 21<sup>st</sup> Century*. 6<sup>th</sup> edition, McGraw-Hill (P.4)

Toby, T. U. (1997) *Essentials of Management and Leadership in Vocational and Technical Education*. Jos. Nigeria Association of Technology Teachers.

Typeø of Competencies, (n.d). Human resources retrieved on 21/06/2011 from <http://www.humanresources.hrvinet.com/typesofcompetency/>

United Nation Environmental Programme (UNEP), (2000) *A Handbook on; How small and medium-sized enterprises in developing countries can protect the ozone layer*. United Nations Publication. Retrieved on 06-06-2011 from [http://en.wikipedia.org/wiki/Smallscale\\_Project\\_Management/](http://en.wikipedia.org/wiki/Smallscale_Project_Management/)

Uzodinma, C.U. (1991). *Resources Management in Vocational Technical Education: a study of technical and vocational educational education initiative in two local education authorities (LEA)*, Sheffield: unpublished Doctoral Thesis. Sheffield. City polytechnic.

Whitman, C.W, Johnson, M.W, and Tomczyk, A.J. (2005) *Refrigeration and Air-Conditioning Technology 5<sup>th</sup> Edition*. United State of America. Thomson Delmar Learning.

William S. F. (2005) *the ten competencies comprise good leadership*. Denver Business Journal retrieved on 07-06-2011 from <http://www.bizjournals.com/denver/stories/2005/08/29/smallb3.html>

Zahra, Gedajlovic, Neubaum, Shulman (2009). "A typology of Social Entrepreneurs: Motives, Search Processes and Ethical Challenges", *Journal of Business Venturing*, 24 (5), 5196532.



## APPENDIX A

Department of Vocational Teacher Education  
University of Nigeria, Nsukka

Dear Sir/Madam,

### REQUEST FOR VALIDATION OF RESEARCH INSTRUMENT

I am a post - graduate student of Industrial Technical Education in the Department of Vocational Teacher Education, University of Nigeria, Nsukka. I am undertaking a research project aimed at **determining the Entrepreneurial Competencies Required of Technical College Refrigeration and Air - Conditioning Graduates for Establishing Small and Medium scale Enterprises in the Federal Capital Territory.**

Attached are statement relating to the study: the purpose of the study, Research Questions, Hypotheses and a draft copy of the questionnaire for the study. You are please requested to vet the items for clarity, relevance and coverage for use in collecting data for the study. You are also requested to put down your comments and suggestions for improving the quality of the instrument.

Thank you.

Name í í í í í í í í í í í í í í í í ..

Department í í í í í í í í í í í í í í

Institution í í í í í í í í í í í í í í í

Signature / Date í í í í í í í í í í ..

Validator's

APP <sup>112</sup> [ B

**TABLE 1**

**SECTION A: DISTRIBUTION OF TARGET POPULATION ACCORDING TO SCHOOLS.**

|  |                      |                                   |
|--|----------------------|-----------------------------------|
| Names of school                                  | GSTC Garki-<br>Abuja | Kuje vocational centre ó<br>Abuja |
| Refrigeration and air -<br>conditioning Teachers | 4                    | 3                                 |

**Source: Federal Capital Territory Administration, Education Secretariat.**

**Table 2**

**SECTION B: DISTRIBUTION OF THE POPULATION OF REGISTERED  
REFRIGERATION AND AIR – CONDITIONING  
CRATSMEN/TECHNICIANS SMEs**

| S/NO | Area council | Population |
|------|--------------|------------|
| 1    | Abaji        | 12         |
| 2    | Bwari        | 15         |
| 3    | Gwagwalada   | 18         |
| 4    | Kuje         | 10         |
| 5    | Kwali        | 10         |
| 6    | Municipal    | 25         |



**Source: Commerce Industries and Tourism Federal Capital Territory Abuja**

## **APPENDIX C**

Department of Vocational Teacher Education

University of Nigeria, Nsukka

DATE:

Dear Respondents,

### **REQUEST TO FILL QUESTIONNAIRE**

I am a post graduate student in the above Department and University currently undertaking a research project titled: Entrepreneurial Competencies required of technical college refrigeration and air - conditioning graduates for establishing small and medium scale Enterprises (SMEs) in federal capital territory.

The attached questionnaire schedule is to elicit the necessary information. You are please requested to respond to the items as objectively as possible. Every information supplied will be treated as confidential and will be used strictly for this research.

Thank you.

Yours faithfully,

**ILIYA, ESTHER**

**DR. (MRS) OGBUANYA, T.C.**

PG/M.ED/09/50563

SUPERVISOR

Researcher

## APPENDIX D

**Questionnaire For Teachers/Instructors of Refrigeration and Air -  
Conditioning and Craftsmen/Technicians of Small and Medium scale Enterprises  
(SMEs) for the Determination of Competencies Required by Technical College  
Refrigeration and Air - Conditioning Graduates for Establishing SMEs in the  
Federal Capital Territory.**

**SECTION A: PERSONAL DATA:** Please check (ç) in the appropriate space for the information needed below. Your status is:

1 - Refrigeration and Air - Conditioning Teacher/Instructor

☐

2 - Craftsman/Technician of SMEs

☐

**INSTRUCTIONS:** Please indicate the level of requirements of the following Competency items by checking good (ç) against the options that best suits your view points. The response options and their corresponding point are:

Highly Required (HR) 5

Required (R) 4

Undecided (UD) 3

Moderately Required (MR) 2

Not Required (NR) 1

**SECTION B: Technical Competencies Required of Refrigeration and Air ó Conditioning Graduates for Establishing SMEs**

| S/N | ITEMS STATEMENT  | RESPONSES |        |         |         |         |
|-----|--|-----------|--------|---------|---------|---------|
|     |  | HR<br>5   | R<br>4 | UD<br>3 | MR<br>2 | NR<br>1 |
|     | To be able to establish small and medium scale enterprise, refrigeration and air - conditioning graduates should be able to: |           |        |         |         |         |
| 1   | Operate brazing equipment properly   |           |        |         |         |         |
| 2   | Use Charging trolling accurately.  |           |        |         |         |         |
| 3   | Skillfully cut copper pipe by using tube cutter and hacksaw.   |           |        |         |         |         |
| 4   | Use leak detector instruments to detect leaks in refrigeration and air ó conditioning equipment accurately.                  |           |        |         |         |         |
| 5   | Use different types of bending tools to bend copper pipes appropriately  |           |        |         |         |         |
| 6   | Have Skills in accuracy and neatness in brazing joints   |           |        |         |         |         |
| 7   | Have high knowledge of mathematics to calculate and estimate cost of materials and production                                |           |        |         |         |         |
| 8   | Skillfully and properly swaging, and flaring of copper tube.   |           |        |         |         |         |
| 9   | Maintain good quality of work  |           |        |         |         |         |
| 10  | Maintain available tools and equipment   |           |        |         |         |         |
| 11  | Have high knowledge on basic electricity principles  |           |        |         |         |         |

|    |  |  |  |  |  |  |
|----|--|--|--|--|--|--|
| 12 | Have high knowledge on refrigeration and air ó conditioning principles |  |  |  |  |  |
| 13 | Remove, clean and fix air conditioner filter appropriately             |  |  |  |  |  |
| 14 | Use appropriate refrigerant for appropriate equipment                  |  |  |  |  |  |
| 15 | Remove and replace drier accurately                                    |  |  |  |  |  |
| 16 | Diagnose electrical fault and amend appropriately                      |  |  |  |  |  |
| 17 | Install air ó conditioner, window and split- unit accurately           |  |  |  |  |  |
| 18 | Remove, repair or replace the compressor appropriately                 |  |  |  |  |  |
| 19 | Remove, clean, repair or replace the condenser appropriately           |  |  |  |  |  |
| 20 | Remove, clean, repair or replace the evaporator accurately             |  |  |  |  |  |

## SECTION C: General Personal Attributes Competencies Required of Technical College

### Refrigeration and Air Conditioning Graduates for Establishing SMEs.

| S/N<br>O | ITEMS STATEMENTS  | RESPONSES |        |         |         |         |
|----------|---|-----------|--------|---------|---------|---------|
|          |   | HR<br>5   | R<br>4 | UD<br>3 | MR<br>2 | NR<br>1 |
|          | Refrigeration and air conditioning graduates should be able to:     |           |        |         |         |         |
| 21       | Endure difficulties in the process of nurturing the enterprise      |           |        |         |         |         |
| 22       | Take risk in the enterprise   |           |        |         |         |         |
| 23       | Maintain good relationship with the community                       |           |        |         |         |         |
| 24       | Maintain good relationship with client                              |           |        |         |         |         |
| 25       | Have a sense of sympathy to customers in terms of damages or losses |           |        |         |         |         |
| 26       | Have respect of the right of other workers                          |           |        |         |         |         |
| 27       | Foster good human relationship both outside the firm & within       |           |        |         |         |         |
| 28       | Have a sense of responsibility                                      |           |        |         |         |         |
| 29       | Have interest in the workers  |           |        |         |         |         |
| 30       | Be self control and discipline in the discharge of duty             |           |        |         |         |         |
| 31       | Adapt to new changes as technology and society is dynamic           |           |        |         |         |         |
| 32       | Have interest in work   |           |        |         |         |         |
| 33       | Set goals for the organization                                      |           |        |         |         |         |
| 34       | Judge the performances of employees                                 |           |        |         |         |         |
| 35       | Be focus driven externally  |           |        |         |         |         |
| 36       | Maintain good personal appearance/neatness                          |           |        |         |         |         |
| 37       | Foster creativity in the enterprise                                 |           |        |         |         |         |

**SECTION D: Financial Competencies Required of Technical College Refrigeration  
and Air ó Conditioning Graduates for Establishing SMEs.**

| S/NO | ITEMS STATEMENT   | RESPONSES |        |         |         |         |
|------|---|-----------|--------|---------|---------|---------|
|      |   | HR<br>5   | R<br>4 | UD<br>3 | MR<br>2 | NR<br>1 |
|      | Refrigeration & air ó conditioning graduates should be able to: |           |        |         |         |         |
| 38   | Estimate construction materials                                 |           |        |         |         |         |
| 39   | Interpret financial statements                                  |           |        |         |         |         |
| 40   | Facilitate auditing of finances                                 |           |        |         |         |         |
| 41   | Facilitate auditing of resources                                |           |        |         |         |         |
| 42   | Control income outgoing finances                                |           |        |         |         |         |
| 43   | Control outgoing finances                                       |           |        |         |         |         |
| 44   | Manage money properly   |           |        |         |         |         |
| 45   | Understand payroll and various deduction                        |           |        |         |         |         |
| 46   | Prepare financial statement                                     |           |        |         |         |         |
| 47   | Keep proper records of all transactions                         |           |        |         |         |         |
| 48   | Budget for product execution                                    |           |        |         |         |         |

**SECTION E: Marketing Competencies Required of Technical College Refrigeration and Air ó Conditioning Graduates for Establishing SMEs.**

| S/NO | ITEMS STATEMENT   | RESPONSES |        |         |         |         |
|------|---|-----------|--------|---------|---------|---------|
|      |   | HR<br>5   | R<br>4 | UD<br>3 | MR<br>2 | NR<br>1 |
|      | Refrigeration & air ó conditioning graduates should be able to: |           |        |         |         |         |
| 49   | Device strategies for profit making                             |           |        |         |         |         |
| 50   | Identify customers needs  |           |        |         |         |         |
| 51   | Advertise products/services to customers                        |           |        |         |         |         |
| 52   | Advertise products for sell through appropriate media           |           |        |         |         |         |
| 53   | Determine availability of goods/raw materials for production    |           |        |         |         |         |
| 54   | Collect market information about current prices                 |           |        |         |         |         |
| 55   | Have knowledge of buying situation                              |           |        |         |         |         |
| 56   | Determine factors/strength of competition                       |           |        |         |         |         |
| 57   | Organize sales promotion to motivate customers                  |           |        |         |         |         |
| 58   | Identify channel of goods distribution                          |           |        |         |         |         |
| 59   | Define the right products to meet customer needs                |           |        |         |         |         |
| 60   | Define the right service to meet customer needs                 |           |        |         |         |         |



**SECTION F: Managerial Competencies Required of Technical College Refrigeration  
and Air - Conditioning Graduates for Establishing SMEs**

| S/NO | ITEMS STATEMENTS  | RESPONSES |        |         |         |         |
|------|---|-----------|--------|---------|---------|---------|
|      |   | HR<br>5   | R<br>4 | UD<br>3 | MR<br>2 | NR<br>1 |
|      | To be able to establish small and medium scale enterprises, Refrigeration & air ó conditioning graduates should be able to: |           |        |         |         |         |
| 61   | Control and direct authority  |           |        |         |         |         |
| 62   | Delegate authority  |           |        |         |         |         |
| 63   | Evaluate all activities/operations in the process of goal attainment  |           |        |         |         |         |
| 64   | Set a channel for effective feedback from customers   |           |        |         |         |         |
| 65   | Manage time and meet job schedule   |           |        |         |         |         |
| 66   | Handle difficult customers with patience  |           |        |         |         |         |
| 67   | Handle difficult customers with care  |           |        |         |         |         |
| 68   | Develop organization policies   |           |        |         |         |         |
| 69   | Interpret organization policies   |           |        |         |         |         |
| 70   | Implement organization policies   |           |        |         |         |         |
| 71   | Create long term vision for the organization  |           |        |         |         |         |
| 72   | Create an open door policy  |           |        |         |         |         |
| 73   | Foster relationship among members of the organization   |           |        |         |         |         |
| 74   | Have knowledge of need for employee growth and development  |           |        |         |         |         |
| 75   | Appraise employees performance  |           |        |         |         |         |
| 76   | Be sensitive to the feeling of others   |           |        |         |         |         |
| 77   | Repair demanded items before collection date  |           |        |         |         |         |
| 78   | Manage time schedule  |           |        |         |         |         |
| 79   | Manage job schedule   |           |        |         |         |         |
| 80   | Appraise job performance  |           |        |         |         |         |

|    |  |  |  |  |  |  |
|----|--|--|--|--|--|--|
| 81 | Set attainable goal for the organization |  |  |  |  |  |
|----|--|--|--|--|--|--|

## SPSS Output for Cronbach Alpha

### SCALE: ALL VARIABLES

#### Case Processing Summary

|       |                       | N  | %     |
|-------|-----------------------|----|-------|
| Cases | Valid                 | 12 | 92.3  |
|       | Excluded <sup>a</sup> | 1  | 7.7   |
|       | Total                 | 13 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

#### Reliability Statistics

|                  |            |
|------------------|------------|
| Cronbach's Alpha | N of Items |
| .961             | 81         |

## TEACHERS/INSTRUCTORS

**Scale: ALL VARIABLES**

### Reliability Statistics

| Cronbach's<br>Alpha | N of Items |
|---------------------|------------|
| .991                | 81         |

**Cluster 1**

### Reliability Statistics

| Cronbach's<br>Alpha | N of Items |
|---------------------|------------|
| .948                | 20         |

**Cluster 2**

### Reliability Statistics

| Cronbach's<br>Alpha | N of Items |
|---------------------|------------|
| .938                | 17         |

**Scale: Cluster 3**

### Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .943             | 11         |

#### **Cluster 4**

##### **Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 1.000            | 12         |

#### **Cluster 5**

##### **Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .984             | 21         |

## **CRAFTSMEN/TECHNICIANS**

#### **SCALE: All VARIABLES**

##### **Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .947             | 81         |

#### **Cluster 1**

##### **Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .753             | 20         |

## Cluster 2

### Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .865             | 17         |

## Cluster 3

### Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .607             | 11         |

## Cluster 4

### Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .734             | 12         |

## Cluster 5

### Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .921             | 21         |