

# **ENTREPRENEURIAL COMPETENCIES IMPROVEMENT NEEDS OF SELF- EMPLOYED WELDING AND FABRICATION MASTER CRAFTSMEN IN KADUNA STATE**

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## **Background of the Study**

Welding and fabrication is one of the trades in metalwork technology that can offer a means of livelihood to craftsmen or technicians. Welding in the view of Khanna, (2003) is a material joining process used in making welds which produces coalescence (union) of materials by heating them to suitable temperatures, with or without the application of pressure or by the application of pressure alone. According to Maric, (2009) welding involves the joining of metal using manual, semi- automatic and automatic arc welding equipment. Welding with reference to this paper is a process that joins materials usually metals by heating them to suitable temperatures and causing a union.

Fabrication is the making or producing of goods, equipment from various different materials (Jude, 2011). Fabrication is an industrial term that refers to building metal structures by cutting, bending, and assembling.

Entrepreneurship in welding and fabrication is an antidote in socio economic development and as a means of self actualization for the individual concerned. This is why Usorji, (2010) perceives entrepreneurship as an employment strategy that can lead to economic self sufficiency. In the same direction, Hisrich, and peter (2002) explained entrepreneurship as the process of creating something new with value by devoting necessary time and effort, coupled with financial, psychic and social risk with resultant rewards of monetary and personal satisfaction and independence.

Johanson (2004) categorized the benefits that can be derived from entrepreneurship activities to include: enormous personal gain, self employment, offering more job satisfaction and flexibility of the work force, employment for others, promotion of use of modern technology in small scale manufacturing to enhance higher productivity, income generation, and increase higher quality products (including welding and fabrication master craftsmen when they are competent.)

Competency in the view of Olaitan, (2003) is the knowledge, skills, attitudes, and judgments which are required in order to perform successfully at a special proficiency level in a program. International labor organization report (ILO, 2003) states that competency is the knowledge, capability, skills and behavior which are factors in achieving the result pertinent to teaching strategies. Entrepreneurial competencies according to Aliyu, (2008) is the knowledge required for job occupation, skills in the application of the knowledge in one's sphere of work in order to accomplish occupational roles. Entrepreneurial competencies as it relates to this paper involve essential knowledge and skills obtainable in welding and fabrication and those skills which professionals in the field must possess and be able to demonstrate at optimal level of acquisition and functioning for improvement of welding and fabrication industry. This can be achieved if the entrepreneurial competencies improvement needs of self- employed welding and fabrication master craftsmen in Kaduna State are determined. Entrepreneurial competencies expected of welding and fabrication master craftsmen in Kaduna State are: technical, managerial, marketing, and information and communication technology competencies which and when strictly followed.

Improvement is the ability to become better than before. In the same direction, Olaitan, Amusa, and Azouzu (2010) see improvement as the ability or condition for becoming better than before. Improvement in this paper as it concerns self- employed welding and fabrication master craftsmen in Kaduna State is to become better in their technical competencies, managerial competencies, marketing competencies, and information and communication technology competencies.

Need is something that is required not just because one would like to have it, but because it is useful or very important. Need according to Gall, Gall, and Borg (2007) is a discrepancy between an existing set of conditions and a desired set of conditions. Procter, (1995) observed need as a condition of lacking or wanting something necessary or very useful. Need in this paper is concerned with the competencies required for successful enterprise by self- employed welding and fabrication master craftsmen.

Master craftsmen are people that have passed through training in crafts which include theoretical and practical training in the craft and also business and legal training which include the qualification to be allowed to train apprentices as well.

Skilled workers according to Ludwig, McCarthy, and Repp (1975) include those employed in the skilled trades which require from two to five years to learn. It requires both knowledge and skill which can be learned through a combination of shop

instruction, classroom instruction, and on-the-job training. Skilled self-employed welding and fabrication master craftsmen in this study are those that have received training in welding and fabrication through a combination of shop instruction, classroom instruction and have established their own business, and are also registered with ministry of labor and productivity and are supervisors of their businesses.

Semi-skilled worker according to Ludwig, McCarthy, and Repp, (1975) include workers in occupation requiring some special training for the tasks they perform. The period for the training in most instances may range from several days to about one year, and in some instances, however, the training period may require as long as two years. Semi-skilled welding and fabrication craftsmen in this study include those that are next in command to the supervisor in an industry known as fore-men who have passed through special training for the tasks they perform.

Technical competencies is the ability to do something expertly and well in accordance to set standard, ( Ogbuanya and Fakorede, 2009). Joy, (2010) stated that skills are those knowledge, competencies which individuals can supply and gainfully utilized for the purpose of achieving optimum productivity in industries

Managerial competency is the ability of an entrepreneur to manage his staff and define the expected outcomes clearly and to get the things done at the best and cheapest ways and means. In the same vein, Kamsit, (2000) sees management as the process of allocating an organization inputs (human, and economic resources) by planning, organizing, directing and controlling for the purpose of producing outputs (goods and services) desired by the customers so that the organization objectives are accomplished. Lack of managerial competencies by self employed welding and fabrication master craftsmen in Kaduna State can lead to lack of progress of an enterprise or the enterprise may fold up resulting to welding and fabrication master craftsmen engaging themselves in motorcycles business (okada) for a living.

Marketing competencies is concerned with the skills an entrepreneur exhibits in getting the right goods and services to the right people at the right place, right time, right price with right communication and promotion. Datol, (2012) sees marketing competencies as a means by which producers of products send down their goods to consumers just for the purpose of satisfying them. Hisrich and Peters (2002) listed some marketing competencies needed by entrepreneur for the success of the enterprise to include; ability to determine selling price, advertising products, identification of target market and customers, sales promotion, identification of channel of distribution, and aggressiveness towards profit making. Most entrepreneurs (including welding and fabrication master craftsmen) 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, (Lidimma, 2011). Aminu (2009) observed that many entrepreneurs including welding and fabrication craftsmen) have myopic view of the market due to lack of marketing education to market their goods. Therefore, for self-employed welding and fabrication master craftsmen to overcome this market problem, they require marketing

competencies to articulate the entire necessary marketing program that may lead to success and acceptability of their products in the market. When self-employed welding and fabrication master craftsmen are competent in marketing, and information and communication technology (ICT), it leads to success of an enterprise.

Information and communication technology (ICT) is a set of activities that is facilitated by electronic means, the capturing, storage, processing transmission and display of information. Information and communication technology (ICT) according to Ede (2009) refer to a broad range of activities and equipment including all the tools, application and information which are available and accessible in most cases through computers. Accordingly, UNESCO (2002) defined information and communication technology (ICT) as the combination of information technology with other related technologies, specifically communication technology. Information and communication technology in the context of this study means using computer machines by self-employed welding and fabrication craftsmen to satisfy customer's requirements in a systematic and reliable fashion. Ede, & Olaitan, (2010) stated that quality assurance of graduates of metalwork in the technical colleges is that sets of activities (teaching through the use of ICT in teaching,) intended to ensure that products ( Technical college graduates ) satisfy customers (society) requirements in a systematic, reliable fashion. In the same direction, Federal ministry of Education (2009) showed that there have been poor performances of metalwork students in their final examination. The poor performances of metalwork students (with welding and fabrication craftsmen inclusive) could be attributed to the teachers not utilizing the application of Information and Communication Technologies in teaching. A study conducted by Ede, and Olaitan, (2010) revealed that ICT tools/facilities were not utilized at all in the teaching of metalwork (welding and fabrication).

For welding and fabrication master craftsmen to operate successful enterprise, they must combine both technical competencies, managerial competencies, marketing competencies and information and communication technology together. It is in the light of this that the paper tends to determine the entrepreneurial competencies improvement needed by self employed welding and fabrication master craftsmen in Kaduna State that may be obtained through entrepreneurial education training.

Specifically, the paper sought to determine the technical, managerial, marketing and information and communication technology competencies improvement need of self- employed welding and fabrication master craftsmen in Kaduna state. The following research questions guided the study.

1. What are the technical competencies improvements needed by self employed welding and fabrication master craftsmen in Kaduna state?
2. What are the managerial competencies needed by self employed welding and fabrication master craftsmen in Kaduna state?
3. What are the marketing competencies improvements needed by self employed welding and fabrication master craftsmen in Kaduna state?

4. What are the information and communication technology competencies needed by self employed welding and fabrication master craftsmen in Kaduna state?

### **Methodology**

Four research questions were developed to guide the paper. Survey research design was adopted for the paper, A survey research design according to Osuala, (2005) involves the study of both small and large population through sampling and the use of questionnaire and interview for data collection. The research was carried out in Kaduna state, Nigeria. The population was 132 craftsmen comprising of 59 fabrication and welding supervisors as skilled craftsmen who registered with the ministry of labor and productivity and 73 fabrication and welding fore-men as semi- skilled craftsmen. There was no sampling as the entire population was used for the research.

An entrepreneurial competency improvement need questionnaire (ECINQ) was used to identify areas where welding and fabrication master craftsmen need improvement on entrepreneurial competencies. The questionnaire had one category level of need. A 5 point response scale of highly needed, needed, moderately needed, slightly needed and not needed with corresponding scores of 5, 4, 3, 2, and 1 respectively.

The instrument was face validated by three experts. Two from the department of Industrial Technical Education, University of Nigeria Nsukka and one from Federal College of Education Pankshin. Cronbach Alpha was used to determine the internal consistency and reliability of the instrument and a reliability coefficient of 0.820 was obtained. One hundred and thirty nine (139) copies of the questionnaire were administered on the respondents with the help of five (5) hired and trained research assistants on a face to face basis. Seventy three (73) copies of the questionnaire were administered to semi- skilled craftsmen, sixty- six (66) questionnaire were retrieved making a percentage of 90.4% while the un-retrieved copies of the questionnaire were 7 making a percentage of 9.6%. Fifty-nine (59) copies of the questionnaire were administered to skilled welding and fabrication master craftsmen, fifty – five (55) copies of the questionnaire were retrieved making a percentage of 93.2%, while the un-retrieved copies of the questionnaire were four (4) making a percentage of 6.8%. The data collected were analyzed using mean and t-test. Mean statistics and standard deviation were used to answer research questions 1-4. The cut- off point for taking decision on each item was 3.50. Any item whose mean was 3.50 points and above were regarded as needed, while any item whose mean was less than 3.50 were regarded as not needed.

### **Results**

The results for the research are hereby presented in accordance with the research questions answered.

**Research Question 1**

What are the technical competencies improvement needed by self- employed welding and fabrication master craftsmen?

The data for answering research question 1 are presented in table 1 below

**Table 1: Mean Responses of the Respondents on the Technical Competencies Improvement Needed by Self-Employed Welding and Fabrication Master Craftsmen**

S/N	ITEMS STATEMENT			
	To be competent in welding and fabrication, craftsmen need the ability to:	<sup>x</sup>	SD	Remarks
1.	Read and interpret drawings / blue print accurately	4.23	0.78	Needed
2.	Handle tools materials correctly	4.15	0.78	Needed
3.	Maintain good quality of work	4.24	0.77	Needed
4.	Braze metal	3.83	0.85	Needed
5.	Identify, fabricate and utilize metal fasteners	3.99	0.83	Needed
6.	Identify and utilize sheet metal tools	3.97	0.79	Needed
7.	Produce or undertake modern designs	4.05	0.81	Needed
8.	Calculate and estimate cost of materials and estimation	4.07	0.88	Needed
9.	Mix flux by bubbling acetylene gas held in a closed container	3.83	0.84	Needed
10.	Program the automatic resistance machine welding	3.61	1.03	Needed
11.	Differentiate different types of arc welding electrodes	3.77	1.10	Needed
12.	Manipulate or use Robot for manual welding	3.41	1.33	Needed
13.	Adjust speed drive motors in automatic arc welding	3.65	1.17	Needed
14.	Classify metals correctly	4.08	0.87	Needed
15.	Identify different uses of metals	3.99	0.86	Needed
16.	Identify metalwork safety practices	4.05	0.84	Needed
17.	Store hazardous substances	4.02	0.81	Needed
18.	Inspect and diagnose leakages in gas welding equipment using computers.	3.66	0.99	Needed
19.	Read trouble codes on computer model system	3.78	1.00	Needed
20.	Maintain correct welding position	4.13	0.99	Needed
21.	Set pressure regulators properly for automatic cutting	3.94	1.02	Needed
22.	Maintain available tools	4.08	0.85	Needed
23.	Weld with stability and precision	4.10	0.33	Needed
24.	Observe general welding safety rules	4.13	1.16	Needed
25.	Differentiate types and sizes of gas welding nozzles tips	0.92	0.89	Not Needed

**Research Question 2:** What Are the Managerial Competencies Improvement Needed by Self-Employed Welding and Fabrication Master Craftsmen?

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

**Table 2: Mean Responses of the Respondents on the Managerial Competencies Improvement Needed by Self-Employed Welding and Fabrication Master Craftsmen**

S/N	ITEMS STATEMENT	X	SD	Remarks
	To be competent in welding and fabrication craftsmen need the ability:			
26.	For good human relationship	4.29	0.71	Needed
27	For employee growth and development	3.93	0.89	Needed
28.	To direct the affairs of the establishment	4.11	0.77	Needed
29.	To determine personnel salary	3.81	0.91	Needed
30.	To set attainable goals for the organization	3.96	0.83	Needed
31	To be sensitive to the feelings of others	4.13	0.82	Needed
32.	To appraise employees performance	3.96	0.86	Needed
33.	To meet job schedules	4.09	0.86	Needed
34.	To conduct effective meetings	3.82	0.94	Needed
35.	To supervise effectively	4.03	0.88	Needed
36.	To manage time	4.10	0.65	Needed
37.	For Inventory control	4.16	0.84	Needed
38.	To make long and short term planning	4.04	0.89	Needed
39.	To foster relationship among members of an organization	4.13	0.79	Needed
40	To oversee organizational matters	4.37	3.75	Needed
41.	To evaluate all activities/operations in the process of goal attainment	4.12	0.74	Needed
42.	To set channels for effective feedback from customers	4.03	0.79	Needed
43.	To develop organization policies	4.12	0.89	Needed
44.	To be patient and careful with difficult customers	4.03	0.75	Needed
45.	To produce demanded items before collection	4.15	0.84	Needed

**Research Question 3: What Are the Marketing Competencies Improvement Needed by Self-Employed Welding and Fabrication Master Craftsmen?**

The data for answering research question 3 are presented in table 3 below

**Table 3: Mean Responses of the Respondents on the Marketing Competencies Improvement Needed by Self-Employed Welding and Fabrication Master Craftsmen**

S/N	ITEMS STATEMENT	X	SD	REMARKS
	For welding and fabrication craftsmen to be competent they need the ability to:			
46.	Identify channels of goods distribution	3.96	0.82	Needed
47.	Have knowledge of buying situations	3.86	0.82	Needed

48.	Identify customers needs	3.99	0.81	Needed
49.	Organize sales promotion to motivate customers	3.88	1.08	Needed
50.	Advertise products/services to customers	3.67	1.09	Needed
51.	Identify the target market for sales of product	3.85	1.09	Needed
52.	Source for market information about current prices	3.94	0.90	Needed
53.	Determine availability of goods/raw materials for production	4.91	0.93	Needed
54.	Define the right product and services for meeting customer's needs	4.23	0.72	Needed
55.	Budget for products execution	4.08	0.79	Needed
56.	Keep proper records of all transactions	4.06	0.84	Needed
57.	Be prudent	4.06	0.74	Needed
58.	Control of all incomes and expenditures	4.55	0.45	Needed
59.	Device strategies for profit making	3.98	0.75	Needed
60.	Advertise products for sale through appropriate media	4.05	0.78	Needed
61.	Determine and interpret factors/strength of completion	3.96	0.88	Needed

**Research Question 4:** What Are the Information and Communication Technology Competencies Improvement Needed By Self Employed Welding And Fabrication Master Craftsmen?

The data for answering research question 4 are presented in table 4 below

**Table 4: Mean Responses of the Respondents on the Information and Communication Technology Competencies Improvement Needed by Self Employed Welding and Fabrication Master Craftsmen**

S/NO	ITEMS STATEMENT	RESPONSES		
	For welding and fabrication craftsmen to be competent they need the ability to:	X	SD	REMARKS
62	Transact business with telecommunication facilities	3.91	0.82	Needed
63	Differentiate methods of communication through telephones	3.99	0.86	Needed
64	Send and receive correspondents through telex facilities	3.89	0.86	Needed
65	Create and send e-mail, downloading and updating file transfer protocol, and internet relay chart	3.56	1.09	Needed
66	Publish information on web site	3.65	1.15	Needed
67	Give information and receive feedback from customers through E-mail	3.71	1.06	Needed
68	Protect document using a password	3.64	1.08	Needed
69	Use computer Aided Design software	3.60	1.08	Needed
70	Create tables using tabulation to compile figures	3.62	1.03	Needed
71	Open existing document	3.69	1.09	Needed
72	Create and save new documents	3.71	1.05	Needed
73	Open several document files	3.82	1.10	Needed
74	Enter a file name and click on the save button	3.71	1.07	Needed
75	Open to web browsing applications	3.72	1.12	Needed



76	Internet explorer program	3.70	1.09	Needed
77	Know common logical operators in a search using search engine	3.78	1.05	Needed
78	Format drop down menu and select, and apply design template	3.72	1.07	Needed
79	Design and display on the clip board	3.67	1.03	Needed
80	Locate the insertion point where you wish to paste	3.61	1.13	Needed
81	Use internet for E-marketing (subscribe and make purchase on line	3.57	1.33	Needed
82	Use the Internet for banking services	3.48	1.28	Needed

Data presented in table 4 revealed that all the information and communication technology competencies needs had their mean values ranging from 3.48 to 3.99; this showed that the mean value of each item was above the cut-off point of 3.50, and also indicating that all the 21 information and communication technology competencies are improvement needed by Self-Employed Welding and Fabrication Master Craftsmen in Information and Communication technology Entrepreneur Competencies.

The table also showed that the standard deviation (SD) of the items are within this range of 0.82 to 1.33; this indicated that the opinions of the respondents were not far from each other in their responses.

### **Discussion and Findings**

The findings of this research work revealed that 23 technical education competencies needed improvement by self – employed welding and fabrication master craftsmen in Kaduna State. These technical competencies include: Read and interpret drawings/blue print accurately, handle tools materials correctly, maintain good quality of work, braze metal, identify fabricated and utilized metal fasteners, identify and utilize sheet metal tools, produce or undertake modern designs, calculate and estimate cost of materials and estimation, mix flux by bubbling acetylene gas held in a closed container, program the automatic resistance machine welding, manipulate or use robot for manual welding, adjust speed drive motors in automatic arc welding, classify metals correctly, identify different uses of metals, identify metal work safety practices, store hazardous substances, inspect and diagnose leakages in gas welding equipment using computers, read trouble codes on computer model system, maintain correct welding position, set pressure regulators properly for automatic cutting, maintain available tools, weld with stability and precision. These findings were in agreement with the opinion of Oviave, (2009) that technical competencies are needed in entrepreneurship education.

The findings of this research work also revealed that all the twenty (20) managerial competencies needed improvement by self-employed welding and fabrication master craftsmen in Kaduna State. These include: For good human relationship, for employee growth and development, to direct the affairs of the establishment, to determine personnel salary, to appraise employees performance, to meet job schedules, to conduct effective meetings, to supervise effectively, to manage

time, for inventory control, to make long and short term planning, to foster relationship among members of an organization, to oversee organizational matters, to evaluate all activities/operations in the process of goal attainment, to set channels for effective feedback from customers, to develop organization policies, to be patient and careful with difficult customers, to produce demanded items before collection. The findings are in agreement with the opinion of Hashim (2007) and Eze, (1994) that entrepreneurs need management competencies to motivate their workforce.

The findings of this research work also revealed that all the sixteen (16) marketing competencies needed improvement by self-employed welding and fabrication master craftsmen in Kaduna State. These include: For good human relationship, for employee personnel salary, to set attainable goals for the organization, to be sensitive to the feelings of others, to appraise employees performance, to meet job schedules, to conduct effective meetings, to supervise effectively, to manage time, for Inventory control, to make long and short term planning, to foster relationship among members of an organization, to oversee organizational matters, to evaluate all activities/operations in the process of goal attainment, to set channels for effective feedback from customers, to develop organization policies, to be patient and careful with difficult customers, to produce demanded items before collection. The findings are in agreement with the opinion of Hashim, (2007) and Eze, (1994) that entrepreneurs need management competencies to motivate his workforce.

The findings of this research revealed that all the sixteen (16) marketing competencies needed improvement by self-esteeming welding and fabrication master craftsmen in Kaduna State. these include: identify channels of goods distribution, have knowledge of buying situations, identify customer's needs, organize sales promotion to motivate customers, advertise products/services to customers, identify the target market for sales of product, source for market information about current prices, determine availability of goods/raw materials for production, define the right product and services for meeting customer's needs, budget for products execution, keep proper records of all transaction, be prudent, control of all incomes and expenditures, device strategies for profit making, advertise product for sale through appropriate media, determine and interpret factors/strength of completion. These findings are in agreement with the opinion Benson, (1990) that entrepreneurs need marketing competencies for his firm.

The findings this research work revealed that all the twenty (20) information and communication technology competencies are needed for improvement by self-employed welding and fabrication master crafts in Kaduna State. These include: transact business with telecommunication facilities, differentiate methods of communication through telephones, send and receive correspondents through telex facilities, create and send e-mail, downloading and updating file transfer protocol, and internet relay chat, publish information on web site, give information and receive feedback from customers through e-mail, protect document using a password, use computer Aided design software, create tables using tabulations to compile figures,

open existing document, create and save new documents, open several documents files, enter a file name and click on the save button, open to web browsing applications, internet explorer program, know common logical operators in a search using search engine, format drop down menu and select, and apply design template, design and display on the clip board, locate the insertion point where you wish to paste, use internets for e-marketing (subscribes and make purchase on line). These findings are in agreement with the opinion of Ede and Olaitan (2010) that entrepreneurs need ICT computer skill competencies in order to meet with technology changes.

There was no significant difference in the mean responses of the skilled and semi-skilled self-employed welding and fabrication master craftsmen. The implication of the findings is that the profession of the two groups of respondents did not significantly affect their opinions on the items.

There was no significant difference in the mean responses of the skilled and semi-skilled self-employed welding and fabricating craftsmen on managerial competencies needed by self-employed welding and fabrication master craftsmen. The implication of the findings is that the profession of the groups of respondents did not significantly affect their opinion on the items.

There was no significant difference in the mean responses of the skilled and semi-skilled self-employed welding and fabrication master craftsmen on marketing competencies needed by self –employed welding and fabrication master crafts. The implication of the findings is that the profession of the two groups of respondents did not significantly affect their opinions on the items

There was no significant difference in the mean responses of the skilled and semi-skilled self-employed welding and fabrication master craftsmen on information and communication technology competencies needed by self –employed welding and fabrication master craftsmen. The implication of the findings is that the profession of the two groups of respondents did not significantly affect their opinions on the items

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