LOCAL FABRICATION OF CAP DRYING MACHINE AND ITS PROSPECTS TO NIGERIAN ECONOMY

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Abstract

Sustainable Technological innovations are an essential component of human development. With increasing human population and high demand for cap washing, innovations are required to meet the needs of the people. The fabricated cap drier was constructed to ease the hardship experienced by the cap washing business. This include time it takes to dry the cap, which is the most crucial part of cap washing. Qualitative research undertaking to assess the contribution and willingness to use the fabricated cap drier indicates that the new technology will increase their income and will save time it takes to wash a unit cap. This will avoid cap loss and climate constraints experienced in the business of cap washing.

1.0 Introduction

Polytechnic Education was formally introduced into the Educational System of Nigeria through Decree No. 33 of 1979. As a result, Polytechnics in Nigeria have made some progress in terms of provision of middle-level manpower needed for various industries considering the number of Polytechnics, and their carrying capacities (Okpare A. O., 2015). As at 2020, there were a total of 149 Polytechnics and Colleges of Technology offering different courses in Nigeria. Nigerian Polytechnics have recorded some impressive achievements over the years.

As a result, Nigerian polytechnics have had successes in the areas of fabrication of equipment/instruments for the agricultural and industrial sectors, energy conversion equipment and application, textile and arts design, provision of manpower for the oil and gas industries, etc. these developments have been rudimentary and therefore a far cry from the expectations of all considering the huge capital and human resource investments by government and other stakeholders, hence the desired technological advancement has not been attained (Okpare A. O., 2015).

Manufacturing plays an exceptional role in driving growth and economic development. Manufacturing in South Africa remain largely dominated by resource-processing sectors that are capital- and energy-intensive. A structural shift towards higher growth in more value-adding and higher labor-absorbing manufacturing sectors is essential for South Africa to shift to a development path which generates more growth and higher levels of employment (Zalk, 2014).

According to Belina*et.al.* (2012) in order to ensure cost effective products, evaluation of commercial potentials of such products are essential. This include the market demand for the product, availability of raw materials and economic component of the product.

The present state of local content development in Nigeria is a clear hint that an accountable and active approach to sustainable local content development needs to be adopted by government policy makers and upstream operators that will guarantee a better future for the nation's oil and gas industry. This according to findings of the research, Technological advance does not occur just by chance; rather it is a product of a nation's sound economic management, policy reengineering, good governance and a social value system that rewards hard work and creativity. Further, having a few companies devoted to Nigerian content and pursuing local content programs is not enough. Support for local content policies must be nation-wide. It must be accepted by all and should become embedded in every operator's business philosophy (Balouga, 2012).

According to Chete et al., (1999) Innovation is defined as the application of the knowledge acquired through science and technology investment to achieve production. It is also important to note that this knowledge might be acquired through learning, research, or experience, but until it is practical in the production of goods or services and translated to development, it cannot be measured as innovation.

AM et al., (2018)designed and fabricated shea nut Rotary Dryer for Shea Butter Production in Nigeria. In their research, they asserted that Instead of spreading the shea nut/ kernel under the sun which is not explicit in supply, the use of rotary drier can be employed and since the temperature of the drier can be controlled, accurate moisture content required for extraction of shea butter can be obtained. Challenges of climate factors such as rain getting the shea kernel wet can be lessened or avoided, drying time can also be reduced, and production of shea kernel with uniform properties can be attained.

A mechanical vacuum assisted paddy drier was developed by Nagarajan, (2016) The fabricated drier was intended for drying coir and other seeds such as wheat, etc. The drier may also be used for conveyance, winnowing and even dissemination of paddy. This project “standardized” paddy dryer” showed good drying capacity, quality, and drying cost. The extension activities have also been successful with the installation of one fully operational unit from the user's money.

2.0 Methodology

The main aim of this research was to identify some fabrications from Northern Polytechnics in Nigeria and evaluate its contribution to Nigerian economy. A cap drier machine that was designed at Kaduna Polytechnic was sampled for the purpose of this research. Purposive sampling was used to interview men involved with cap washing business. One hundred and fifty respondents were purposely selected and questionnaires were administered to only people who are into cap washing business. Descriptive statistics was used to analyze findings of the research.

3.0 Discussions of results

Majority of the respondents used traditional sun drying method (99%), which they said is affected by the season. The time it takes different type of caps to dry is a factor of season. But with the fabrication of cap drier, while it takes about 7hours to dry Kube using the traditional Sun drying method, it only takes the fabricated drier less than 30 minutes to carry out the same task. This without giving any consideration to time of the season. This supports findings of Hossain et al., (2005) where fabricated solar tonnel drier optimized for drying chilli without color loss dries up the chilli in a very short time.

TABLE 1: NUMBER OF CAPS WASHED BY THE RESPONDENTS

Number of Caps	Frequency	Percent
15-20	**28**	**18.7**
21-25	**14**	**9.3**
26-30	**7**	**4.7**
31-36	**101**	**67.3**
Total	**150**	**100.0**

SURVEY, 2020

About 70% the respondents stated that depending on the type of cap, they are able to wash on average 30-40 caps per day. This, they stated was due to time and cap heads it requires to dry a unit of a cap. But with the electronic cap drier, it is possible to dry about 140 caps in a day. 78% of the respondents washed Kube at the cost of 200 naira per unit. This according to the findings of this fabrication, will mean a double in income generated from the traditional sun drying method.

This is evident in the research conducted by Society, (2012) where indirect solar drier was fabricated for drying of hill products. Findings of the monitored machine indicates that, During the rainy season farmers sold their products at higher price dried in the solar driers with increase in income of the farmers is in the range of 29% to 200%.Another important component of the findings of this research is the space traditional cap drying occupies. This according to the respondents, to wash 50 caps means 50 heads are needed to sun dry them. With the development of cap drier, a cap washer only needs the machine and a bowl for washing the caps.

On the question of whether they can afford the machine, 62.5% of the respondents agreed that the cost is affordable as it will increase their return. According to the estimates made by the researcher who fabricated the cap drier, the machine will cost about hundred thousand naira (₦100,000).

TABLE 2: PURCHASING POWER

Affordability	Frequency	Percent
Yes	**93.8**	**62.5**
No	**56.3**	**37.5**
Total	**150**	**100.0**

SURVEY, 2020

4.0 Conclusions

Population explosion affects the demand and efficient way of washing caps to meet the growing demand of the people. Findings of this research indicates that if people who are in to cap washing embraces this new technology, it means an increase in the number of caps to be washed and dried per day. This increases individual's income and reduce the risk of cap loss due to long periods taken in their custody.

Certainly, there are huge fabrications with high economic potentials in Nigerian polytechnics. Some were funded by the government while some by the individual students as their dissertation or thesis but most of these fabrications are not put to commercial use. There is therefore an urgent need for the creation of a medium through which these fabrications can be showcased for venture capital to invest on the project to achieve their full commercial potentials.

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