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ORIGINAL

Examining marketing approaches and overcoming challenges in the cashew nut processing sector of tamil nadu: a comprehensive review

Examen de los enfoques de comercialización y superación de los retos en el sector de transformación de anacardos de tamil nadu: una revisión exhaustiva

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ABSTRACT

Tamil Nadu stands as one of India's leading cashew nut producers and processors, driven by robust export potential and domestic demand. In Cuddalore district alone, approximately 675 cashew nut processing units are scattered across the region. These mills predominantly rely on manual labor, offering substantial employment prospects for rural communities. However, the well-being and health of the workers in these processing units are often bargained for the old-style tools and paraphernalia. Remarkably, research regarding occupational health and the ergonomic aspects of work equipment within these SM (Small & Medium) cashew nut dispensation units in Cuddalore district has been conspicuously scarce. This study seeks to evaluate the existing working conditions concerning the musculoskeletal health of cashew workers in these units, shedding light on an underexplored area. The researcher has meticulously gathered and analyzed 92 reviews pertaining to cashew nut processing units, categorizing 35 of them into seven key themes: the concept of cashew processing units, the cost associated with processing units, perceived industry pressures and challenges, compatibility and customer influence, digital marketing strategies and mediums, financial performance within cashew nut processing units, and the acceptance of technology models.

Keywords: Marketing Strategies; Challenges of Cashew Nut; Processing Units; Cashew Nut in Cuddalore District; Marketing Challenges.

RESUMEN

Tamil Nadu es uno de los principales productores y procesadores de anacardos de la India, impulsado por un sólido potencial de exportación y la demanda interna. Sólo en el distrito de Cuddalore hay repartidas por toda la región unas 675 unidades de procesamiento de anacardos. Estas fábricas dependen predominantemente de la mano de obra, lo que ofrece importantes perspectivas de empleo a las comunidades rurales. Sin embargo, el bienestar y la salud de los trabajadores de estas

unidades de procesado se ven a menudo regateados por las herramientas y la parafernalia anticuadas. Notablemente, la investigación relativa a la salud laboral y los aspectos ergonómicos del equipo de trabajo dentro de estas unidades de dispensación de anacardos SM (Small & Medium) en el distrito de Cuddalore ha sido llamativamente escasa. Este estudio pretende evaluar las condiciones de trabajo existentes en relación con la salud musculoesquelética de los trabajadores del anacardo en estas unidades, arrojando luz sobre un área poco explorada. El investigador ha reunido y analizado meticulosamente 92 reseñas relativas a las unidades de procesamiento de anacardos, clasificando 35 de ellas en siete temas clave: el concepto de unidades de procesamiento de anacardos, el coste asociado a las unidades de procesamiento, las presiones y retos percibidos por la industria, la compatibilidad y la influencia del cliente, las estrategias y medios de marketing digital, el rendimiento financiero dentro de las unidades de procesamiento de anacardos y la aceptación de modelos tecnológicos.

Palabras clave: Estrategias de Marketing; Desafíos del Anacardo; Unidades de Procesamiento; Anacardo en el Distrito de Cuddalore; Desafíos de Marketing.

INTRODUCTION

Portuguese explorers brought cashews, which are indigenous to South America, to the Goa region of India around 1598 AD (Johnson1, 1973; Mohod, Jain, Powar, Rathore, & Kurchania, 2010). At first, the main goals of its cultivation were to support dry-land agriculture for economic sustainability and to counteract soil erosion. But as time has gone on, cashew planting has spread over India's eastern and western coasts. Although cashew has been produced and consumed traditionally for a very long time, the commercial cashew trade started in the 1920s. ndia was the first country in the world to introduce commercial cashew processing. In this time frame, processed cashew from India began to be imported exclusively by the United States (Harilal, Kanji, Jeyaranjan, Eapen, & Swaminatha2, 2006). India is currently the world's largest producer of cashew nuts. India currently produces an amazing 8,17 lakh MT of raw cashew nuts annually, according to the DCCD report for 2019–20 (DCCD, 2019). India also imports raw cashew nuts at the same time from several nations. It imported and processed a significant 6,49 lakh MT of raw cashew nuts in the 2018–19 fiscal year (CEPCI, 2019; DCCD, 2019). In total, India supplied 1,98 lakh MT of cashew nuts (on a kernel basis) to the entire market, making up an astounding 24 % of global production (INC, 2019).

The proposed model

The researcher has meticulously curated a collection of 92 articles relevant to the marketing aspects of cashew processing industry units. After a thorough examination, 34 of these reviews have been deemed highly suitable for inclusion in this study. Consequently, the researcher is poised to investigate the primary variables pertinent to the study. These variables are as follows:

Concept of Cashew Processing Unit (12 articles)
Cost of Processing Unit (4 articles)
Perceived Industry Pressure and Challenges (5 articles)
Compatibility and Customer Power/Pressure (4 articles)
Digital Marketing Strategies and Mediums (3 articles)
Financial Performance in Cashew Nut Processing Unit (3 articles)
Technology Acceptance Model (3 articles)

These variables will serve as the focal points for the research, providing valuable insights into the marketing dynamics of cashew processing industry units.

Review based on the concept of cashew processing unit

In his study "Cashew Nut Processing," Russell (1969) examined the various processing steps necessary to separate the kernel from the raw cashew nut. The study illustrates how crucial it is to dry raw nuts before keeping them. It also lists the advantages of shelling by hand and by machine. It emphasizes how the cashew processing sector can increase its revenue by effectively utilizing its by-products. In their 1998 study, "Plant Hygiene and Infestation Control in Cashew Processing Units and Quality Improvement in Cashew Kernel," Pillai and Bhat4 investigated the mechanisms behind infection control and plant hygiene in cashew processing facilities. Among the main objectives of the research is to examine infectious diseases that affect cashew workers. Based on the results of this investigation, workers' productivity can be increased by creating a healthier working environment and implementing a variety of other health-related measures. Baskara Rao (1998) The author has examined cashew's development in India from a national viewpoint in his work titled "National Perspective for Cashew Development." The research has focused extensively on India's cashew sector growth and exports. The study highlights that cashew has been one of the sources of income and employment, it fetches foreign earnings and its contribution to the national economy is quite significant. Ramalingam Pillai[6] (1998) in his study entitled ―Changing Need in Packaging of Cashew for Export‖ stresses the need and importance of changing the design and style of packing of cashew for exports. The study points out that in order to attract the international market and to compete with kernel from Africa and Brazil, the package should look attractive. Korbech Ruby and Olesen (1999) Describe the International Trade Center's efforts to increase exports from developing nations through trade promotion programmes. Explain. In addition to product and market development, this service also includes the generation of trade information, the development of human resources, the administration of global sourcing and supply management, and the assessment of needs and the creation of programmes. Product and market development, in his opinion, is the most essential of the three factors. Somyot & Sermpol (1985) built a centrifugal cashew nut sheller to crack cashew nuts with the least amount of kinetic energy possible. It is comprised of a sheller bin, discharger, feeder, and revolving shaft with a centrifugal disk. The electric motor rotates the shaft, which is positioned vertically at the middle of the sheller. Through the centrifugal disks, cashew nuts supplied from the top feeder are processed. Centrifugal force causes the feed cashew nut to strike the sheller bin's casing. The centrifugal sheller's performance was assessed at four different speeds: 800, 900, 1000, and 1100 rpm. For cashew nuts weighing more than 7 g and less than 7 g, the shelling efficiency ranged from 51,3 % to 58,3 % and 21,8 % to 25,9 %, respectively. It was discovered that this sheller could shell 200 Kumar (1989) created a cashew nut sheller in which the cashew nut uses centrifugal force to strike the sheller's hard exterior. The impeller is the primary part of this centrifugal sheller. This produces the impulse force required to strike the cashew nuts against the sheller's hard surface. It also has a set-up for gathering nuts with shells. Two manual cashew nut sheller models (AE (KKU) 1 and AE (KKU) 2) as well as one semi-automated sheller model (AE (KKU) SA 1) were created by Thivavarnvongs, Okamoto, and Kitani10 (1995). Press-twist movement of a hand lever was the basis for the operation of both manual shellers. Cashew nut feeding in AE (KKU) SA 1 is done manually, while shelling happens automatically. Sakai, Kitani, and Thivavarnvongs (1995) assessed semi-automated and manual shellers. They stated that the automatic model (AE (KKU) SA 1) had a whole kernel recovery of 80,0 %, while the AE (KKU) 2 was easy to operate and had a whole kernel recovery of 79.,3 %. Ajav (1996) created a manual cashew nut cracker that is inexpensive. Frame, pillar pole, cutting case, blades, hand lever, spring, and cracking jug assembly make up this apparatus. Using small, medium, and large size nuts, the machine's efficiency was reported to be 694,6 %, 75,5 %, and 75,7 %, respectively. Jain and Kumar created a cashew nut sheller that runs on electricity. It is divided into sections for power supply, transmission, feeding, shelling, and discharge. The sheller is primarily made up of two circular wooden disks that One rotating disk is spring-loaded, and the other is fixed to the sheller's sidewall. When cashew nuts are fed into the sheller, a rotating disk compresses and shears

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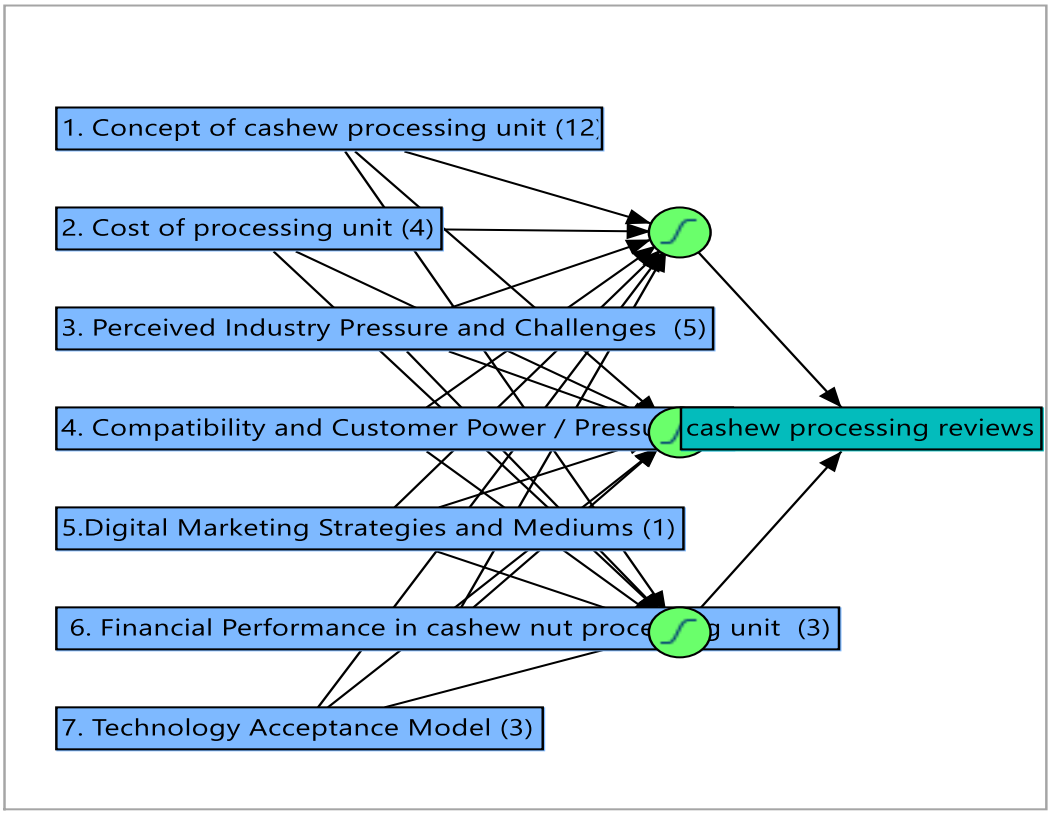
them. The discharge section is where the shelled nuts are gathered. In the year 2000, Bulaong, Gregorio, and Jallorina created an automated cashew nut sheller. It has two blades, an upper and a lower blade that resemble cashew nuts in shape. The upper blade is twisted to shear the cashew nut after the lower blade is driven into the nut to the required thickness using a micro switch. One nut at a time is shelled in this manner.

Figures 1. Cashew nut processing unit review process model



Review related to Production and Digital Marketing Adoption Determinants

The total cost of production is made up of both fixed and variable costs, according to Jayaraman(1981) in his paper "An Economic Analysis of Production and Marketing of Cashew Nut in Jayamkondam taluk at Trichirapally District, Tamil Nadu." The annual portion of the total establishment costs, land revenue, interest on fixed capital, fixed asset depreciation, and land rental value are all considered fixed costs. The annual maintenance cost, which included labor for various tasks and chemicals for plant protection, is reflected in the variable cost. In her 1976 study titled "The Impact of Minimum Wage Legislation on Cashew Industry," Emam Beevi notes that the minimum wage law's initial effect was to raise wages in processing units covered by the factory act; It finds that the average fixation of minimum wage led to an increase in workers' average daily earnings. However, the number of working days in Kerala has decreased as a result of the processing activities being shifted from Kerala to Tamil Nadu, which has reduced the annual average earnings. The unidirectional movement of cashew nuts from producers to final consumers was examined by Adejo, Otitolaye, and Onuche (2011) in their paper, "Analysis of Marketing Channel and Pricing System of Cashew Nuts in the North Central of Nigeria." According to the study's summary, price volatility primarily affects cashew nut marketing because of the seasonality of the crop's production and the scarcity of facilities for processing and storing cashew nuts. To maintain the market's activity throughout the year, appropriate storage and a

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steady supply of cashew nuts can guarantee a manageable price structure for successful and efficient marketing. When it comes to marketing cashew locally and internationally, it's one of the crops that needs special attention. Portuguese explorers brought it to Nigeria in the fifteenth and sixteenth centuries, and since then, the crop has quickly expanded to all of the nation's agro-ecologies. In their study on the marketing practices of cashew farmers, Johnson and Manoharan (2009) sought to understand the marketing practices of both new and experienced farmers in the Tamil Nadu district of Cuddalore. Four villages from the Panruti block and four from the Vridhachalam block of the Cuddalore district were selected for the study. There were 45 responders from each of the two gardens—the old and the new—in the sample size. The majority of respondents were found to have medium-level marketing behaviors. Compared to respondents from the old garden, those from the new garden demonstrated superior marketing practices. The nuts were being sold raw to the local traders without any value addition. Cashew apples were rarely sold, while the majority of respondents sold cashew nuts whenever the market offered a fair price for nuts. Before the cashew sale, the majority of respondents gave advice to their neighbors and relatives, and very few gave advice to extension officials. Age, yearly income, and the progressiveness of one's decision-making process were found to be significant and influential factors in marketing behavior.

Review related to cost of processing unit

Value addition to the commodity is done through processing. Processing reduces the perishability of the product, increases its shelf life, increases demand, and makes it available in the ready-to-use form. It also makes it possible to recover valuable byproducts. The return from processed products is higher to processors. In this part of the chapter, it is proposed to review the results of earlier studies with reference to the stages and costs involved in processing. Sivanandam et al. (1980) The Pudukkottai district of Tamil Nadu's cost of production per kilogram of cashew kernels was calculated by the authors of the research study Economics of Forest Plantations – Cashew, which was published in the Journal of Kisan World. According to the study, the cost of raw materials accounted for 73,22 % of the total cost of producing cashew kernels. Wages and interest came in second and third, respectively, at 12,10 and 7,28 %. The study also showed that one MT of cashew nuts produced 220,91 kilograms of kernels, or 22,09 %, at a unit cost of production of Rs. 20,40 per. The per quintal processing cost came to Rs. 161,42, according to Ipte and Borude's (1982) study on the Economics of Marketing and Processing of Cashew Nut in Ratnagiri / Sindhudurg District of Maharashtra, which was published in Cashew Causerie. The container (14,44 %), labor (21,92 %), and interest on capital (46,03 %) were the main cost components. Raw nut processing resulted in a value addition of Rs. 350,72 per quintal, or 52,66 %. In their research on cashew processing and marketing that was published in the Journal of Agricultural Marketing, Hassan and Raghuram (1987) looked at the cashew industry in Andhra Pradesh's Prakasam district. They watched as the nuts were dried, roasted, shelled, dried again after being shelled, peeled, graded, condition, and packed. According to the study, processing 80 kg of raw nuts produced 22 kg of kernels (28 % recovery). The processor's processing costs came to Rs. 87,06, of which labor accounted for 56,6 % and material costs for 42,5 %. Shelling constituted the largest portion of labor costs, followed by peeling. The total cost of processing per quintal of raw nuts came to Rs. 553,54, with interest accounting for 53,62 % of the total cost, according to Nagesh21's 1990 Ph.D. thesis, Investment in Production and Marketing of Cashew in Karnataka - An Economic Analysis, submitted to the University of Agricultural Sciences, Dharwad. Wages for piece rate workers (20,36 %) came next. It was discovered that the smaller amount was spent on other expenses such as salaries, unit overheads, depreciation utilities, administrative overheads, and packing material costs. The cost of the primary raw material (cashew nuts), which accounted for 71.99 % (or Rs. 1423,01) of the total cost of production, was the primary factor.

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Review related to Perceived Industry Pressure and Challenges

Every business enterprise experiences various kinds of problems and threats, which may be internal or external. The nature and intensity of problems differ from one organization to another. Studies focusing on the problems faced by and suggestions recommended by various researchers are reviewed. In her study "Problems of Workers in the Cashew Industry," Rachel James (1981) of the Directorate of Cashew Nut Development demonstrates that the primary issue facing cashew workers in the industry is that they do not receive enough working days. There is no way to resolve the issue of having more working days until the supply of nuts is expanded. The study shows that employers have taken advantage of their employees. The management has set a daily minimum output requirement for Dearness Allowance. This implies that D.A. 36 is only granted when the product's minimum output is prepared. What a worker can produce on average in a day under less than ideal working. According to the study's findings, shelling is the cashew industry's least enjoyable job. Furthermore, local nuts that are sold to cottage industries cannot significantly support cashew factories by adding more working days when the import of raw materials is declining. The lower pay and unfavorable working conditions for cashew laborers in Kanyakumari District have an impact on their interest, according to a study by John (1990) titled "Problems of Cashew Workers in Kanyakumari District." Growing numbers of cashew industries are being established in Kanyakumari District due to factors such as cheap labor, lack of labor issues, availability of raw nuts, low. According to the study, in order to support the advancement of cashew workers, the Minimum Wages Act should be applied to the cashew industry in Tamil Nadu, and social welfare programs like the Provident Fund, Gratuity, and Employees Security Insurance (ESI) should be made statutory. The cashew processors in Kerala moved their processing units to the Kanyakumari district of Tamil Nadu to take advantage of labor costs. This was the driving force behind the establishment of the units in Kanyakumari, where the primary benefits were the availability of cheap labor, according to Ahamed (1996) in his study, "Problems of cashew processors and workers in Vilavancode. Eijinatten (1985) in his study, on Development of Cashew in Burma: A Consultancy Report published in the Plantation Crops Division, FAO, observed that to transform the cultivation of cashew into a profitable venture, attractive to farmers, yield levels had to be elevated considerably. It was proposed that this can, in fact be achieved by adopting an alternative arrangement of cashew trees in hedgerows and by gradual upgrading of plant material through a recurrent selection based on outstanding cashew trees chosen in cooperation with local farmers. He pointed out that attention should be given to establishing the enterprise in the drier zones of middle Burma. These developments should be supported by training of specialized personnel. The literature on cashew nut shell liquid (CNSL) and its products was reviewed by Menon et al. (1985) in their research paper, Cashew Nut Shell Liquid: Its Polymeric and Other Industrial Products, which was published in the journal of Scientific and Industrial Research. They reported the various options and shortcomings with regard to the utilization of CNSL. The topics dealt with comprised of origin, extraction, production statistics, exports, chemistry and composition, polymerization characteristics, salient features of CNSL polymers, CNSL- based products, cashew cement, specially coatings, adhesives and binder resins, industrial chemicals, plastics in main importing countries, and future outlook.

Review related to Compatibility and Customer Power / Pressure

The demand for a commodity depends on the several uses of the product. Study and experiments carried on indicates the changing uses of cashew nut over a period of time due to value addition to the product. The beneficial aspect of cashew nut, cashew apple, and CNSL as discussed by researchers are examined and enumerated here. Augustin (1987) in his study, Cashew Liquor and Wine published in the Indian Cashew Journal observed that it was high time to establish the industrial use of cashew apple to avoid what otherwise would be a national waste. Fermentation- based industry would offer 66 employment and add to the revenue of the country. Procedures were standardized for the production of

high quality liquor, cashew wine, and vinegar from cashew apple. Bakhru (1987) in his research study, Nutritive and Curative Value of Nuts published by the Indian Cashew Journal revealed that all genuine nuts were rich in protein, fat, and carbohydrate foods, rich in many minerals, and a few of them contained various vitamins .Nuts, especially in the form of milk drinks, are very beneficial in the treatment of numerous common diseases. Disorders like loss of appetite, general depression, nervous weakness, and anaemia, and cough, urinary, and liver troubles are believed to act in response favourably with the use of cashew nuts. Muturi and Arunga (1988) in their analytical work, Cashew Shell Liquid: A Review of Production and Research in Kenya, published in the book, Tropical Science reported several experimental studies aimed at developing secondary commercial products from CNSL. Various techniques of extracting the liquid (which contains about 90 per cent anacardic acid) from the shell were reported, and formulations for coating materials based on CNSL were explained. The study revealed that physical and performance attributes similar to those of existing commercial products could be achieved. Vijayakumar (1991) revealed in his research paper, Cashew Apple Utilisation: A Novel Method to Enhance Profit published in the journal, The Cashew that nearly 23,5 lakh tons of cashew apples were not properly utilized and wasted every year in the country. Only in the state of Goa, the entire apple produced was utilized for the production of feni. Major constraints in the proper utilization of apples for non-alcoholic preparation were the existence of astringent and acid principles and short shelf life. The methods developed at the Research Institutions were yet to reach the farmers. The Directorate of Cashew Development, Cochin has undertaken a pilot programme on spreading the utilization of cashew apple among the cashew farmers through demonstration-cum-training programmes.

Review related to Financial Performance in cashew nut processing unit

Brown et al. (1984) in their study, Advancing Agricultural Production in Africa presented in the Commonwealth Agricultural Bureau's First Scientific Conference at Tanzania, indicated that in 1973-74, the world production of raw cashew nuts reached a maximum output of 480000 ton, of which 75 per cent came from East Africa; Mozambique being the largest producer followed by Tanzania. In these countries, cashew is primarily a small holder's crop. The study indicated, the production of cashew nut in Mozambique and Tanzania has started to decline. Das (1984) in his article, Cashew Exports: Constraints and Prospects published in the journal, Indian Horticulture presented general information on the area, production, and trade of cashew, followed by a brief discussion on marketing and processing constraints. He opined that the world programme on cashew development is expected to save the industry through schemes such as research and training programmes, establishment of progeny orchards, vegetative propagation, prophylactic spraying, demonstration plots, and construction of roads. He reported that by the end of 1995, the Indian cashew production is likely to reach 50,000 tons. Eijnaten (1984) in his volume, Cashew Development Activities in Western Province of Zambia (Agricultural University, Wageningen, Netherlands) analyzed small scale plantings of cashew from the year 1958 onwards. The study revealed that western province of Zambia had a vast cashew production prospective. Actual yields, however, were too low for economic production. There was a need to use more productive planting materials and to adopt the hedgerow system of planting, instead of the actual 12x12 m planting. This report recommended a project for supporting the agricultural extension service by bringing this new selection message to the growers and providing them with selected planting materials.

Review related to Technology Acceptance Model

In his study "Cashew Production and Processing Technology," Mandel (1992) looked at the technologies used in the cashew industry for both production and processing. The study focuses on the history of cashew plantations, cashew tree diseases, and cashew processing technology. The study

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recommends that in order to boost cashew plantations' productivity, efficient plant protection measures should be implemented. The study also emphasizes the necessity of introducing cashew plant varieties with high yields that are adaptable to various soil and climate conditions. Consumer consent and technology use are explained by the Davis (1989) technology acceptance model. According to the model, users will consider perceived ease of use and perceived utility when deciding how and when to use new technology. According to Davis (1986), user intentions, user behaviors, and perceived usefulness are additional factors that influence TAM. According to Davis (1989), perceived usefulness is the extent to which an individual feels that a particular system enhances the quality and output of their work, whereas perceived ease of use is the extent to which an individual feels that a particular system is simple to use. Theoretically, consumers will thus embrace technology as long as it can effectively and successfully complete the task at hand. The problem with TAM is that it fails to take into account the expenses, structural requirements, and external factors that compel people to adopt technology. Park (2009) asserts that TAM is a helpful theoretical model for comprehending and illuminating the behavioral intentions behind technology use. It's interesting to note that over time, researchers like Park and Kinm (2014) have expanded or revised the original TAM to include new constructs like Perceived Usefulness and Perceived Ease of Use (PEOU). In relation to this study, the theory helps to clarify how customers' perceptions of a firm's utility determine whether or not it survives. Because of this, managers of exporting companies should be able to take advantage of digital platforms to build a strong brand image, which is necessary for business success and expansion. Varghese35 Jermi Raju (2018) According to his research, "Technological upgradation & sustainability of traditional resource-based industries: A research of Cashew Export Processing Sector in Kerala, India," the industry's adoption of new processing technology has a significant positive impact on the sector's export performance by increasing the usefulness of processed cashew and providing employment opportunities for rural households. As the report makes clear, technological advancement can support traditional resource-based industries in a global context while preserving rural labor households' means of subsistence with little loss of jobs. This might have considerable benefits for export revenues.

CONCLUSION

Drawing from the aforementioned reviews, specifically the review based on the cashew processing unit concept, Examine the factors influencing the adoption of digital marketing and production. Examine the processing unit's cost. Review of the pressures and challenges perceived by the industry Review of Customer Power/Pressure and Compatibility The cashew nut processing unit's financial performance, digital marketing strategies and media, and technology acceptance model are all reviewed. A suitable processing unit design was chosen after the review and discussion. The final design of the cashew nut processing units was the consequence of several processes.

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CONTRIBUTIONS OF THE AUTHORS

VR came up with the idea, designed the study, and wrote the manuscript. TM helped draft the manuscript and was instrumental in the planning and execution of the study. The final manuscript has been reviewed and approved by both VR and TM.

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ETHICAL CLEARANCE

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