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Production Management of Chichacorn Industry of Ilocos Sur

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ABSTRACT

This study assessed the production management of the chichacorn industry in the province of Ilocos Sur, particularly the production process and the level of implementation of production activities. It used the descriptive-correlation method of research. Questionnaires and interviews were used to gather data for the respondents who were registered owners/producers and workers of the chichacorn industry in Ilocos Sur; supplemental data were gathered from DTI–Vigan City. All the chichacorn producers were on sole proprietorship with a capital of Php20,001-Php30,000 and annual sales of more than Php100,000. There is a very high implementation, production capability, purchasing of raw materials and ingredients, and quality standards. Years of operation in the industry have a bearing on purchasing raw materials and quality standards.

Keywords: *Production management, chichacorn industry*

INTRODUCTION

Production may be defined as the processes and the utilization of methods to transform visual inputs like raw materials, semi-finished goods, or subassemblies and non-visible inputs like ideas, information, or knowledge into goods or services. In these processes, resources are used to produce suitable goods or render service of quality and have exchange value.

Chichacorn production has been proven to be a viable business industry since the province primarily depends on agriculture, and corn is one of the premium products of the farmers. Chichacorn contributed to the economic upliftment of the area and national development. This industry has been phenomenal because it caters to the public's wants. The chichacorn industry is a manufacturing business that uses corn kernels as the main ingredient. Its product is a consumer good intended for and used directly by the end users or consumers.

There exists competition in the chichacorn industry, as can be seen with the various brands being sold in markets which gave rise to some problems as well as difficulties on the part of the producers. It cannot be denied that this industry supports the livelihood of most of the residents in the area of study. Thus, the problems and difficulties of the chichacorn producers cascade to the farmers who serve as suppliers. Like any other local industry in Ilocos Sur, this industry has financial and human resources and production issues. The high cost of production coupled with poor human resource practices aggravates the financial stability of the producers. Hence, determining the prevailing production problems should be given preferential attention.

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The following related studies and literature on production, particularly on technology selection, facilities, and maintenance, production capability, and quality standards, provided reference to the researcher in her study.

Production may be defined as the processes and the utilization of methods to transform visible inputs like raw materials, semi-finished goods, or subassemblies and non-visible inputs like ideas, information, or knowledge into goods or services. In these processes, resources are used to produce suitable goods or render service of quality and have exchange value.

Stevenson (2002) stressed in his book on Operations Management that the productive system has something to do with transforming resource inputs to create valuable goods and services as outputs. The input-conversion-output sequence is a helpful way to conceptualize effective methods, beginning with the smallest unit of productive activity, which we commonly refer to as an operation. An operation is an overall process of producing a product or service that leads to the final output.

Further, one of the primary responsibilities of operations management is to achieve productive use of resources. Productivity measures the relationship between outputs (goods and services) and inputs (labor, capital, materials, or other resources) used to produce them (Stevenson, 2002). Technology is applied to creating goods, providing services, and improving the stewardship of precious and finite resources (Rillamas, 2013). High quality, reliability, serviceability, safety, user friendly, and environmentally friendly are among the desirable characteristics of a product. Any product should have quality and be perceived as having quality. Quality is both objective and perceived.

Quality goods are imperative to compete for business against companies that produce or promote similar products. Product quality means incorporating features that can meet consumer needs or wants and giving customer satisfaction by altering products or goods to make them free from deficiencies or defects. Product quality depends on (1) the type of raw materials used for making the product; (2) how well production technologies are implemented; and (3) the availability of production-related overheads like power, water supply, and transport (Akrani, 2013).

Moreover, Akrani (2013) identified quality of design, conformance, reliability, safety, and proper storage as the main aspects of product quality. He suggested that a company focus on product quality before, during, and after production.

The Bureau of Product Standards mandates that the packaging materials for chichacorn should be appropriate for the product to be packed and for the expected conditions of handling during distribution and storage. This should provide the products adequate protection from contamination and be sufficiently durable to withstand mechanical, chemical, and thermal stresses encountered during processing and normal distribution. All packaging materials must be clean and free from defects affecting the product or package integrity. These shall be stored clean and sanitary (Bureau of Product Standards-Department of Trade and Industry [BPS-DTI], 2010).

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Arce (2009), in his study "Management Practices of the Longganiza Producers in Vigan City," cited that the packaging practices of longganiza were given much attention, where producers had to label their product in conformity with DTI or Department of Science and Technology (DOST) and Bureau of Food and Drugs (BFAD) requirements and specifications. Producers must choose productive resources which were abundant in supply because these were cheaper than scarce resources. Management must make use of attractive and informative packaging.

Albayalde (2009), in her study "Production and Marketing Practices of the Calamay Industry in the City of Candon" found out that the level of production practices of the calamay industry in Candon was high. However, the respondents perceived that these productions were highly done due to a small quantity of adequate physical capital. There was a need to strengthen the production practices of the calamay industry in Candon City by purchasing up-to-date state-of-the-art equipment and facilities so that producers may get out from their traditional cooking practices on vats and ladles.

Reynante (2009), in her study on the "Status of the Furniture Industry in San Vicente, Ilocos Sur," found out that most employed the traditional method in their production activities. Most furniture industry owners have owned their equipment and facilities for more than ten years already, made from wood and metal. Another production is the maintenance of facilities which is done at times not scheduled by the majority. In the arrangement of facilities, production layout is done by the majority. The production area is at home by the majority. Technology selections are always the traditional ways and are adapted from others.

Trinidad (2011) concluded in her study on the "Status of the Salt Industry in Ilocos Sur" that all the producers were still using the traditional way of production, which they inherited from their ancestors or relatives. They had 4-6 facilities in the production area and had been operating these facilities for 1-2 years. These facilities were maintained twice a month, and it was unscheduled. The facilities were made of wood and metal and were arranged according to the production layout. The majority had a production capability of 1-10 sacks of salt within a month. The raw materials used are sea soil and seawater. They got the raw material weekly and acquired it within the municipality. It has also been observed that there was no quality control.

Almachar (2014) defined quality as one which conforms to the customer's specification through the indicators of customer satisfaction rather than self-gratification. It is the customer who decides on quality and not the company. The company produces products catering to the needs and wants of its chosen market segment. She stressed that higher quality products must be produced at a competitive price to compete worldwide.

The chichacorn industry may prosper through the assistance of the government; particularly, the local government will encourage the people of Ilocos Sur to be entrepreneurial and promote their livelihood projects which will ultimately uplift their standard of living. This will also help reduce social and family issues and problems.

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The results of this study will benefit the chicha corn producers in Ilocos Sur in general, which will serve as a basis for improving the production management of the chichacorn industry. Awareness of these would help the chichacorn producers in the province to become successful and profitable by adopting best practices utilizing the results of this study. For improved capital goods, chichacorn producers could use better tools and equipment to increase productivity and discover previously unutilized resources.

Further, the study could benefit the concerned local government units (LGUs) in attaining its thrust for socio-economic growth and development as the results of this study could boost the tourism and export development programs of the concerned municipalities in particular and the country in general. In addition, the impact of the study would serve as input by LGUs in their policy-making processes and functions along local industries, specifically in assisting small-scale, home-based industries.

This study aimed to assess the production management of the chichacorn industry in the Province of Ilocos Sur by identifying the industry's current production. Specifically, it sought to determine the personal profile of owners/producers, workers, and customers and the business profile of the producers. At the same time, it investigated the Status of production management practices, precisely the technology selection, production capability, purchasing of raw materials and ingredients, and quality standards. Lastly, this study shall explore the significant relationship between the production management of the chichacorn industry and business profile.

METHODOLOGY

Research Design. The study utilized the descriptive-correlational method of research. The descriptive method was used to describe the profile of the respondents. In contrast, the correlational method determined the relationship between the Status of the chichacorn industry in production management and business profile.

The same approach was used by Ilac, A. G. (2018) on the "Spatial and Seasonal Standing Crop of Seagrass Communities during Adverse Times in the North-Western Province of the Philippines'' and Phattarapornpong P. and Valdez, G. P. Jr. (2021) on the "Business Practices of the Hotels and Resorts in Khrabi Province, Thailand." Navarro, R. B. and Gorospe, B. M. S. (2015) also used the same method in the "Stressors and Coping Mechanisms of Children of Overseas Filipino Workers in Higher Education Institutions of Ilocos Sur."

This approach gives accurate and meaningful details to determine the Status of the chichacorn industry in Ilocos Sur and its prevailing conditions on its production management.

Population and Sample. There were 36 respondents of the study broken down as follows: 7 producers/owners of chichacorn and 29 workers. A list of registered chichacorn producers was provided by the provincial office of the Department of Trade and Industry.

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Table 1
Distribution of the respondents

Area/Location	Producers/ Owners	Workers	Total
Vigan City	1	6	7
Bantay	1	6	7
Sto. Domingo	1	3	17
Candon City	4	14	18
Total	**7**	**29**	**36**

Data Gathering Instrument. A structured questionnaire was used to gather the relevant data needed in the study. The instrument was adopted from the studies of Almachar (2014) on the "Status, Problems and Prospects of Bagent Industry in the First District of Ilocos Sur" and Rillamas (2013) on the "Status of the Freshwater Fish Cage Industry in the First District of Ilocos Sur," but were modified and validated by experts to meet the requirements of the research.

Data Gathering Procedure. First, the researcher sought permission/approval from the mayors of the cities and municipalities covered in the study. The researcher asked permission from the producers or owners to float the questionnaire personally to them, their workers, and customers for an additional interview. A list of registered chichacorn producers was obtained from the Department of Trade and Industry Provincial Office in Vigan City.

Statistical Tools Used. The statistical tools utilized in the treatment of the data gathered for the study were frequency count and percentage, mean, gain ratio and gain score percentage, and t-test.

RESULTS AND DISCUSSION

The following personal profiles of the owners/producers, workers, and customers in terms of sex, age, civil status, educational attainment, and other sources of income are discussed respectively.

It can be gleaned that the majority, or 52.8%, of the producers/owners and their workers were male, while 47.2% were female. It only meant that a muscular physique in this industry was required. A significant 30.6% of the respondents were in the age group of 16-25, while 19.45% belonged to the age bracket of 26-35. The majority, or 52.8% of the producers/owners and their workers, were married, while two, or 5.6%, were widowed and separated. This finding implies that married individuals have greater motivation to work because they are obliged to provide for their family needs and wants. Under educational attainment, the majority, or 52.8% of the chichacorn industry workers in Ilocos Sur, were high school graduates, while two, or 5.6%, were at the high school level. The table also reveals that a significant percentage of 22.2% of both producers and workers were college graduates. Aside from producing chichacorn, a significant majority, or 85.7% of the producer respondents, had

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other sources of income, while one, or 14.3%, was engaged in buying and selling. This means that the chichacorn producers in Ilocos Sur only partially depend on making chichacorn for a living. However, they also venture into producing other products like calamay, bananas, and kamote chips. On the other hand, a significant percentage, or 41.4%, of the worker-respondents were engaged in farming, three, or 10.3%, were in livestock raising, and 6.9% had to buy and sell as an added source of livelihood. However, a significant percentage, or 41.4%, of workers solely depend on their wages from the chichacorn industry.

The following business profile of the chichacorn producers in Ilocos Sur in terms of the type of ownership, initial/start-up capital, source of capitalization, number of workers, number of years in business operation, and annual sales are discussed correspondingly.

Table 2
Distribution of the production activities of chichacorn producers in Ilocos Sur, along with technology selection

Indicators	Producers		Workers		As a Whole	
	f	%	*f*	%		
Production Process						
Traditional (Manual)	4	57.1	7	24.1	11	30.6
Modern (Automated)	-	-	1	3.4	1	2.8
Combination of Traditional and Modern	3	42.9	21	72.4	24	66.7
Total	**7**	**100**	**29**	**100**	36	100.0
Sources of technology used						
Adopted from technology training	5	71.4	27	93.1	32	88.9
Inherited	2	28.6	2	6.9	4	11.1
Total	**7**	**100**	**29**	**100**	36	100.0
Training/seminars attended						
Initiated by NGOs like PCCI, etc.	2	28.6	14	48.3	16	44.4
Initiated by government agencies like DTI, DA, etc	5	71.4	15	51.7	20	55.6
Total	**7**	**100**	**29**	**100**	36	100.0

All or 100% of the owner/producer respondents had a sole proprietorship type of business. Their initial/ start-up capital reflects a substantial percentage who started their chichacorn production business with a capital of PhP20,001-PhP30,000. In contrast, a significant percentage of them, or 14.3%, started their business with PhP30,001-PhP40,000 and PhP10,000 and below, respectively. All or 100% of the producer-respondents drew funds from their personal earnings/savings to start their chichacorn business. In addition to their savings, 42.9% of them availed subsidies or grants from government entities like the Department of Science and Technology. The

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majority, or 71.5%, employed four to six workers, while the other owners/producers employed one to three and ten or more workers, respectively. It also reveals that most of the producer-respondents had been in the business of making chichacorn for 21 years or more. Moreover, a substantial percentage, or 28.6%, existed for 6-10 years, while one, or 14.3%, had been operating his chichacorn business for 11-15 years. Lastly, a substantial percentage of chichacorn producers had a total sale of more than PhP100,000, while one, or 14.3%, had an annual sale of Php80,001 – Php100,000.

Below is the Status of production management practices of the chichacorn industry in Ilocos Sur. It may be gathered from the table that the majority, or 66.7% of the chichacorn industry producers and workers of Ilocos Sur, manufactured chichacorn by combining traditional and modern technology. Moreover, 30.6% of the chichacorn producers used traditional or manual production processes, while a significant number of workers respondents confirmed the use of the modern or automated process. The majority, or 71.4%, of the owner/producer-respondents, claimed that the source of technology they used was adopted from technology pieces of training. At the same time, a significant percentage of them inherited the technology from their parents. The table shows that most producers, or 71.4% and 15 workers, had attended government-initiated training programs. Moreover, a significant percentage or 2 of the owner-respondents and a substantial percentage of the worker-respondents attended non-government-initiated seminars.

Table 3
Overall Mean Ratings showing the extent of practices of production activities of chichacorn industry along production capability, purchase of raw materials, and implementation of quality standards and their DR - respectively

Indicators	As a Whole	
	Mean	**DR**
1. Production Capability	4.84	VH
2. Purchase of Raw Materials	4.66	VH
3. Quality Standards	4.53	VH
Overall	**4.67**	**VH**

Norm:

	Mean Ratings	*Item DR*	*Overall DR*
5	4.21 – 5.00	Always (A)	Very High (VH)
4	3.41 – 4.20	Oftentimes (O)	High (H)
3	2.61 – 3.40	Sometimes (S)	Moderate (M)
2	1.81 – 2.60	Rarely (R)	Low (L)
1	1.00 – 1.80	Never (N)	Very Low (VL)

This is the analysis of the table above, which includes the production capability, purchasing of raw materials, and the extent of implementation of quality standards.

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Production Capability. This was gleaned from having a "Very High" status as supported by proper receiving and storage of final products, rigid sanitation procedures, and strictly followed cleanliness to avoid microbial contamination. All types of equipment are correctly set, maintained, and sanitized. Further, this finding can imply that the chichacorn producers comply with production procedures and processes, thus producing quality and competitive chichacorn. Akrani (2013) said that product quality partly depends on how well production technologies are implemented. Furthermore, according to the Good Manufacturing Practices (GMPs) Policy, food handlers or persons engaged in food handling or food processing should maintain a high degree of personal hygiene, wear suitable protective clothing and gloves, and observe necessary precautions and appropriate behavior while he or she is at work or in the production area. (http://www.ssfpa.net) Finally, this implies that all indicators along production capability are highly practiced by the producers/owners of the chichacorn industry.

Purchasing of Raw Materials. The table reveals a "very high" status with an overall mean rating of 4.66. This means that the producers are always selective of the raw materials and ingredients they need for making chichacorn, visually inspect these ingredients upon purchase and take note of manufacturing and expiry dates to ensure the safety and quality of their products; it only implies that corn kernels come from qualified suppliers. These findings manifest that purchasing raw materials from the chichacorn industry in Ilocos Sur conforms to good manufacturing practices and food processing as this promotes food safety, eliminates hazards, and prevents contamination.

Table 4

Correlation coefficient between the business-related profile and the production practices of the chichacorn industry owners/ producers in Ilocos Sur

Profile	Production Practices				
	Technology Selection	**Production Capability**	**Purchasing of Raw Materials**	**Quality Standards**	**Overall**
A. Business					
Type of Ownership	.a	.a	.a	.a	.a
Start-up Capital	0.156	-0.268	-0.318	-0.178	-0.246
Source of Capitalization	0.125	-0.406	-0.679	-0.53	-0.577
Number of Workers	0.431	0.23	0.273	0.455	0.431
Years in Operation	-0.624	-0.497	-.806*	-.968**	-.968**
Annual Sales	0	-0.447	-0.635	-0.509	-0.588

a. Cannot be computed because at least one of the variables is constant.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

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Extent of implementation along Quality Standard. It was observed to have a "very high" status, that is to state that the chichacorn producers/owners are responsible to their customers, particularly for the quality of their products. In comparison to the study of Almachar (2014) on the bagnet industry, which had a "high" level of implementation, the chichacorn industry had a "very high" level of implementation of production activities along with quality standards. It suggests that chichacorn producers/owners strictly follow the processes, procedures, and techniques set by the DTI and FDA to meet high product standards. Meanwhile, the lowest mean rating of 4.0, described as "Often," was the color and package, respectively. This suggests that the producers least considered the color and package because adhering to higher quality standards is being prioritized by the chichacorn industry. The safety and quality of the products are also considered thru the storage and transport of chichacorn as it may be regularly checked and evaluated to maintain product quality.

Is there a significant relationship between the production management of the chichacorn industry and its business profile?

Years in operation were found to have a significant inverse relationship with the production practices of the chichacorn industry in Ilocos Sur. This implies that the older the business is, the better chances of producing chichacorn products of chichacorn. However, when taken singly, years of operation had a significant relationship to purchasing raw materials (r = -.806) and quality standards (r = -.968) at 0.05 and 0.01 levels of significance, respectively. This implies that the chichacorn producers who have been in operation for an extended period are more lenient than those still new in the industry.

CONCLUSIONS

These are the conclusions drawn from the salient findings of the study. The chichacorn producers in the province of Ilocos Sur were females belonging to the age bracket of 46 and above, married with post-graduate level and college education, and had other sources of income. Furthermore, the workers, unlike the producers, were male; a significant percentage were 25 years and below, married, high school graduates, and engaged in farming as an added source of income. Moreover, the customers were equally distributed in sex; a substantial percentage were from the age bracket 26-35, married, college graduates, and employed. All the chichacorn producers were on sole proprietorship form; a substantial percentage of them started with a capital of Php20,001-Php30,000 which was drawn from their personal earnings/savings, had been in the chichacorn industry for 21 years or more, employed four workers, and with an annual sale of more than Php100,000. Finally, the chichacorn industry needed 150 kilos or more corn kernels per week in their chichacorn production, a weekly volume of 151-300 kilos of packed chichacorn sold within a week. The production activities of the chichacorn industry were assessed by the respondents at a "very high"

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level of implementation along with production capability, purchasing of raw materials and ingredients, and quality standards.

On the other hand, the majority (24 or 66.7%) of the manufacturers used traditional and modern technology in manufacturing chichacorn. There was no significant relationship between a personal profile and production practices of the chichacorn industry. However, there was a significant relationship between years of operations, purchasing raw materials, and quality standards. There was no significant relationship between a personal profile and production practices of the chichacorn industry. However, there was a significant relationship between years of operations, purchasing raw materials, and quality standards. Furthermore, there was a significant relationship between start-up capital and the source of capitalization.

RECOMMENDATIONS

Based on the findings and conclusions of this study, it is therefore recommended that the chichacorn industry continue hiring employees with the skills and competency to produce quality chichacorn. The current workers should be updated with the trade and development in the chichacorn industry by attending training and seminars and tying up with private and government agencies like the Department of Trade and Industry to strengthen and update their awareness and knowledge in managing the industry. The industry should encourage young and unmarried workers to continue their schooling and partner with relevant institutions in conducting livelihood training for other workers and retailers to have other economic activities for a better or quality life. Chichacorn producers should aim for product excellence by purchasing high-quality raw materials from trusted suppliers, contracting corn farmers with quality corn products, and using air-tight sealers for packing chichacorn. Moreover, a follow-up study on marketing management practices should be conducted to have a better scenario of the progress of the chichacorn industry in Ilocos Sur.

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