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ABSTRACT

The study was conducted primarily to determine the Cost and Benefit of Ube Wine Processing per batch and per year with regards to per bottle and per case they produced; to identify the cost incurred and benefits derived by adopting quality management; and to know the problems faced/encountered by the cooperative.

According to the manager that only served as the respondent of the study. The most commonly processed wine per batch was 100 bottles (750 ml) 10 batches per. The selling price per bottle was pegged atPhp 120 and a discount of 4.17 per case. Labor cost was estimated from the allowance of Php 120 per day and the salary of officers was usually on voluntary basis. With regards to other expenses, the cooperative pay their space rentals at Php 18,000 yearly.

The cooperative was about spending Php 704 0f raw materials per bottle and Php 1,500 for the allowance of workers to process in one batch. Given the total cost in production and marketing the cooperative incur losses of (Php 1.24) per bottle and (Php

68.12) per case respectively. The losses could attribute to high cost of raw materials particularly ube and the indirect or other costs per unit of product.

The cooperative faced problems on acquiring its own lot and construction its own building. With regards to the problem in processing the cooperative encountered the problem on high acidity which caused the ube wine turned into vinegar. Aside from this other mentioned problem was the non-functional equipment due to some damages that needed repair or replacement.

With regards to the benefits derived by the cooperative it is recommended that the cooperative should find ways to reduce cost of wine processing and optimized the used of by-products from raw material residues.

INTRODUCTION

Rationale

The word wine comes from the Latin word "vinum", akin to Greek oinos, which means grapes, in larger sense; it is the fermented juice of other fruits.

Wines are also made from root crops like yam, locally known as Ube (Discorea alata) thrives in Benguet especially in the Municipality of Sablan. Sablan is one of the smallest towns in Benguet. The municipality of Sablan is located at the Midwestern side of the Province of Benguet. It is bounded on the north by Kapangan and Burgos, La Union, on the south by tuba and the city of Baguio (Caliging, 2005).

Sablan is also becoming the root crop center in the Province of Benguet (Tandoc, 1994). Ube is one of the many crops that are commonly grown in the barangay of Sablan. Sablan is one main producers of ube in Benguet (Kawili, 2007).

Sablan is basically an agricultural town. Due to its humid and temperate climate during wet and dry seasons, it is ideal to some farming system. It is suitable for all kinds of crops like santol, mango, citrus, coconut and some other fruits (Caliging, 2005).

Ube is usually boiled and served as snack or as substitute for rice, other mash and mix it with sugar or milk. With the development of processing technology, ube is now counted as a priority crop with potential value (Sonay, 2004).

Ube processing is one way of prolonging/lengthening the availability of this seasonal crop for the whole year. Processed ube is kept and consumed even if it's not in season.

REVIEW OF LITERATURE

The History and Importance of Quality

In a broad sense, quality assurance refers to any planned and systematic activity directed toward providing consumers with products (goods and services) of appropriate quality, along with the confidence that products meet consumer's requirements. Quality assurance depends on excellence of two important focal points in business: the design of goods and services and the control of quality during execution of manufacturing and service delivery, which is often aided by some form of measurement and inspection activity (Evans and Lindsay, 2011).

Quality assurance has been an important aspect of production operations throughout history. For instance, Egyptian wall paintings circa 1450 B.C. show evidence of measurement and inspections. Stones for the pyramids were cut so precisely that even today it is impossible to put a knife blade between the blocks. The Egyptians success was due tom good design, the consistent use of well-developed building methods and procedures, and precise measuring devices (Evans and Lindsay, 2011).

The birth of modern quality assurance methods actually began the twelfth century B.C. in china during the Zhou Dynasty. Specific governmental departments were created and given responsibility for production, inventory, and product distribution of raw material (what we now call supply chain management), production and manufacturing, formulating and executing quality standard, and supervision and inspection. These departments were well organized and helped establish China's central control over production process. The system even included an independent quality organization responsible for end-to-end

oversight that reported directly to the highest level of government (Evans and Lindsay, 2011).

Defining Quality

Quality can be a confusing concept, partly because people view quality subjectively and in relation to differing criteria based on their individual roles in the production-marketing value chain. In addition, the meaning of quality continues to evolve as the quality profession grows and natures. Neither consultants nor business professionals agree on a universal definition (Evans and Lindsay, 2011).

Understanding Quality

Quality is defined as meeting or exceeding the needs and expectation of the customer. Thus, the goal of the business should be to find out what the customer wants and then fine tune the process to ensure that they get it. The primary dimensions of product quality include; a. performance, b. features, c. reliability, d. conformance, e. durability, f. serviceability, g. aesthetics, h. perceived quality (Allen, 2006).

However, Allen (2006) stated that service quality is attracting equal or more attention. These are; a. responsiveness, b. reliability, c. accuracy, d. knowledge of employees, e. courtesy, f. consistency, and g. speed. These listed dimensions of product and service quality are, in a broad sense, generic to most situations. However, every business is unique, and if customer satisfaction measurements are to be meaningful, expectations should phrase in the language of customers for each distinct market segment. Also, are more critical than others and it is wise to determine the relative importance of

each need. After measuring the satisfaction levels, emphasis can then be placed on improving performance in areas important to the customer but where the organization may be lacking in comparison to the quality delivered by competitors.

Continuous Quality Improvement

Continuous quality improvement begins by identifying customer expectations for all key "moments of truth" the critical interactions customer have with the organization. This can include contact with, for example, internal support groups, collection individuals, sales representatives, management, or direct service provides. The best way to understand customer expectations is to listen to customers using qualitative research techniques. This usually requires skilful probing by someone practiced in customer satisfaction measurements (Allen, 2006).

After identifying expectations, customer satisfaction can readily be measured. However, this requires the customer to answer specific questions about he or she feels about the company performance. This is why it is so important to capture their interest and build the credibility needed to gain their cooperation. The task is made considerably easier by speaking the customer's language and presenting only issues that are truly significant (Allen, 2006).

Measuring Quality

More and more, quality is being measured. Companies are coming to the conclusion that if they can measure it, they can manage it, and consequently, can improve it. The best performing organizations are allowing customer expectations to drive their quality

initiative. They recognize customers define quality by judging them in relation to competitors (Allen, 2006).Organizations that constantly measure themselves in relation to competitors (Bench-making) are able to quickly capitalize on their emerging strengths and address weakness before they become problems (Allen, 2006).

Measuring the Return on Quality

Total quality efforts should lead to the achievement of outstanding business results. However, successful quality initiative does not guarantee financial success. Many organizations fail to pay enough attention to the financial returns on quality-related investments. Financial returns not only demonstrate when the efforts are going in the right direction, but can help identify changes and improvements that need to be made before staying on the wrong path too long (Allen, 2006).

Management Quality

Management Quality is an organizational concept, which describes the organizations capacity to meet high objectives in its management functions (Allen, 2006). This leads to better customer satisfaction and financial and other performance. By defining management quality, as an organizational concept and applying established quality methodology to the area of management, a great potential for improvement becomes apparent. This improvement translates directly to the business results or other major objectives.

In practice, however, improvements in this area are often given a lower priority, than within processes, more directly concerning flows of products and money. To apply

quality concepts and methods to the area of management includes measuring present level of quality, establishing the desired goal and necessary actions, and finally measuring progress. It is not sufficient to address the symptoms, the obvious deficiencies; you must also consider the fundamental values, policies, system, process and programs, I.e. quality assurance (Allen, 2006).

Concept of Quality Management

Quality management techniques and philosophies are generally referred to as total quality management (Allen, 2006). The core concepts are; continuous process improvement, customer focus, defect prevention, and universal improvement.

Cost of Quality

The reason quality has gained such prominence is that organizations have gained an understanding of the high cost of poor quality. Quality affects all aspects of the organization and has dramatic cost implications. The most obvious consequence occurs when poor quality creates dissatisfied customers and eventually leads to loss of business. However, quality has many other costs, which can be divided into two categories. The first category consists of costs necessary for achieving high quality, which are called quality control costs (Allen, 2006).

Prevention Cost

Prevention costs are all costs incurred in the process of preventing poor quality from occurring. They include quality planning costs, such as the costs of developing and

implementing a quality plan. Also included are the costs of product and process design, from collecting customer information to designing processes that achieve conformance to specifications. Employee training in quality measurement is included as part of this cost, as well as the costs of maintaining records of information and data related to quality (Allen, 2006).

Appraisal Cost

Appraisal costs are incurred in the process of uncovering defects. They include the cost of quality inspections, product testing, and performing audits to make sure that quality standards are being met. Also included in this category are the costs of worker time spent measuring quality and the cost of equipment used for quality appraisal (Allen, 2006).

Internal Failure Cost

Internal failure costs are associated with discovering poor product quality before the product reaches the customer site. One type of internal failure cost is rework, which is the cost of correcting the defective item. Sometimes the item is so defective that it cannot be corrected and must be thrown away. This is called scrap, and its costs include all the material, labor, and machine cost spent in producing the defective product. Other types of internal failure costs include the cost of machine downtime due to failures in the process and the costs of discounting defective items for salvage value (Allen, 2006).

External Failure Cost

External failure costs are associated with quality problems that occur at the customer site. These costs can be particularly damaging because customer faith and loyalty can be difficult to regain. They include everything from customer complaints, product returns, and repairs, to warranty claims, recalls, and even litigation costs resulting from product liability issues. A final component of this cost is lost sales and lost customers. For example, manufacturers of lunch meats and hot dogs whose products have been recalled due to bacterial contamination have had to struggle to regain consumer confidence. Other examples include auto manufacturers whose products have been recalled due to major malfunctions such as problematic braking systems and airlines that have experienced a crash with many fatalities. External failure can sometimes put a company out of business almost overnight. Companies that consider quality important invest heavily in prevention and appraisal costs in order to prevent internal and external failure costs. The earlier defects are found, the less costly they are to correct. For example, detecting and correcting defects during product design and product production is considerably less expensive than when the defects are found at the customer site (Lindsay and Evan, 2011).

Reduce Costs

By using Total Quality Management (TQM) methods and tools, as well as other similar concepts, you can reduce water wasted material, effort, and time in making, selling, and delivering your product. The result is an improvement in the company's bottom line and an increased competitive advantage. Since TQM became popular in the early 1990's, there have been a number of similar initiatives such as re-engineering, six sigma, and such.

Some have been successful and some disastrous. Common sense and good business practice is the most important thing and applying these concepts (Allen, 2006).

Quality Benefits in Organization

Companies that invest in Quality management efforts experience outstanding returns and improvements in performance. Various studies show that quality focused companies achieved better employee participation and relations, improved product and service quality, higher productivity, greater customer satisfaction, increase market share, and improve profitability (Lindsay and Evan, 2011) .

Singhal and Hendricks published one of the most celebrated studies in 1997. Based on the objective data and rigorous statistical analysis, the study showed that when implemented effectively, total quality management approaches improve financial performance dramatically (Lindsay and Evan, 2011).

Quality Management Awards

The philosophies of Deming, Juran, Crosby and others provide much guidance and wisdom in the form of best practices to managers around the world's leading to the development of numerous awards and certification for recognizing effective application of TQ principles. Although awards justifiably recognize only a select few, the rewards of certification criteria provide frameworks for managing from which every organization can be benefited (Lindsay and Evan, 2011).

The Plan-Do-Act Cycle

The Plan–Do–Study–Act Cycle The plan – do – study – act (PDSA) cycle describes the activities a company needs to perform in order to incorporate continuous improvement in its operation.

Plan. The first step in the PDSA cycle is to plan. Managers must evaluate the current process and make plans based on any problems they find. They need to document all current procedures, collect data, and identify problems. This information should then be studied and used to develop a plan for improvement as well as specific measures to evaluate performance.

Do. The next step in the cycle is implementing the plan (do). During the implementation process managers should document all changes made and collect data for evaluation.

Study. The third step is to study the data collected in the previous phase. The data are evaluated to see whether the plan is achieving the goals established in the plan phase.

Act. The last phase of the cycle is to act on the basis of the results of the first three phases. The best way to accomplish this is to communicate the results to other members in the company and then implement the new procedure if it has been successful. Note that this is a cycle; the next step is to plan again. After we have acted, we need to continue evaluating the process, planning, and repeating the cycle again.

METHODOLOGY

Locale and Time of the Study

The study was conducted in the municipality of Sablan, specifically in Barangay Bayabas province of Benguet. This area is where the processing enterprise is located. The study will be conducted on December 2012 to January 2013.

Respondents of the Study

The respondents of the study were the ube wine workers of KMPC in Bayabas, Sablan, Benguet. The manager of the enterprise was been taken as respondents of the study.

Data Gathering Procedure

The data gathering was done through administering of questionnaires to the respondents and to be followed by a personal interview to validate their written answers on the questionnaires.

Data to be Gathered

The data was collected are the cost and benefits in adopting Total Quality Management and the problems encountered by the respondents with regards to quality will be ask.

Data Analysis

The data gathered was tabulated and analyzed using frequency and other appropriate tools to be used.

RESULT AND DISCUSSION

Background in Wine Processing: Kayabang MPC

Kayabang Multipurpose Cooperative (KMPC) or the Ube Wine Processing Enterprise started when the local government of Sablan gave financial assistance to cooperatives. The KMPC was conceptualized in 2003 through the leadership of Mr. Eugenio Calis, a member of the barangay council. It started with thirty two (32) initial members mostly farmers of barangay Bayabas. That same year, the cooperative was registered under Reg. no. CEO 1208 with the Cooperative Administrative Office (COA). It started with fund given by the local government and the one thousand pesos (php 1,000) initial share capital contribution from its member.

To help the shareholders, the cooperative started sell farm inputs like fertilizer and pesticide. The members were allowed to pay their credits after harvest. But this didn't prosper for long due to unpaid debts which cause the cooperative to stops its operation in the meantime.

In 2005, the cooperative entered into food processing industry. They have thought of processing ube. The cooperative tapped the support/assistance of the Department of Agrarian Reform (DAR) and the Department of Trade and Industry (DTI) from them to adopt the ube wine processing technology. Some members of the cooperative have undergone workshop, seminar, and hands-on training on ube wine processing. The same year the cooperative started processing ube wine. Temporarily, production site was at the residence of appointed secretary.

The following year the cooperative joined the nationwide competition on Best Ube Food Products during the 12th anniversary of the CAR- Philippine Fruits and Vegetable, Inc. in Manila. In the search for the Best Product, the cooperative won the title "Best Rookie Food Product of the Year" for their ube wine. This was featured in media and later joined the Adivay Trade Fair to further promote their product.

Management Process in Ube Wine Making

Inspection and sorting. The organization inspects and sort their raw materials most especially the main raw material which is ube/yam. They mix some varieties of ube to create a strong aroma.

Washing and cleaning. The worker washes first the ube for process with it chlorinated clean laboratory tested tap water. They do not peeled ube before were boil to maintain its nutrients.

Juice extraction/liquefying. To extract the juice, the ube will be boiled until such time that it's already cooked. After boiling, they remove the ube so that the juice left in the pot will taken.

Filtration. After the juice is extracted, they filter immediately with the use of fine cheese cloth.

Mixing. After filtration, ingredients will be mixed to the extracted juice

Pasteurization. After the mixing process, the workers pasteurize the juice. In pasteurizing they maintain a specific temperature which is 70 degrees Celsius and when the temperature is reach, they stop. After pasteurization, they cool the juice at a room temperature.

Fermentation. After they cool the pasteurized juice, next is fermentation. They ferment it within 15-30 days in a plastic drum and jars. With regards to the alcohol content they maintain a 12% alcohol level. They measure the alcohol content by using alcometer. They do not measure the pH level after fermentation and also, they do not filter the fermented wine because they do filtering after aging with the use of wine filter press.

Aging. In aging, they use plastic jars and stainless steel tanks. Wine will be age for 6 months. The container will be filled up until brim and sealed with the used of packing tape, tightly wrapped over the cap prevent aeration and evaporation. The filled container will be place in aging room at normal temperature. The containers will be marked with the date, time of production, batch number and the workers involved. This practice is to trace any problem and easy identification of workers involved.

Filtration. After aging the wine is filtered with the used wine filter press to remove the sediments.

Bottle sterilization. The bottles will be sterilized for 20 minutes. Afterwards, drain and cool the bottles before bottling the wine.

Filling/bottling. Workers use 750 ml clean glass bottle for bottling and also plans to upgrade bottles to color green provided by the DTI. To fill the bottles, they siphon the wine from the container with the use of small transparent hose. In filling the bottles, they do not fill it until bottle brim at approximately half inch from the wine until the bottle cover.

Sealing. The wine filled bottles were sealed with the use semi-hard plastic cellophane and heat gun to fit the seal to the neck of bottle and the cap.

Labeling. Before the bottles will be labeled, bottles will be inspected to check the cleanliness and cracks. On the wine labels, information includes the ingredients, brand

name, trade mark and other information to add value to the product. In the wine label design, the attractiveness and appropriateness of information were considered.

Investments in Fixed Asset for Wine Processing

Table 1 presents the total cost of investment in fixed asset according to the stages in wine processing. The cooperative have invested a total amount of Php 217,727.50 with an estimated depreciation cost of Php 14,728.13 from among the various equipment, the filter press was the most expensive (Php. 170,000) followed by water tank (Php 14,000) and the aging jars (Php 13,000). The rest of the equipments were mostly kitchen based that had lower cost per unit.

Moreover, the estimated number of years to last indicates that some equipment will still last for 10 years and the least is 5 years. These have some implication for the costing of the product, whereby the shorter economic life of property would mean higher depreciation value, thus would results to a higher indirect cost for the product.

The equipment was used in a year for ten batches which implied that the facilities were not fully maximize its uses.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to determine the costs and benefits in ube wine processing. It aimed to; identify the cost incurred by the ube wine producers, identify the benefits derived by the ube wine producers in adopting quality management and to identify problems encountered by the cooperative. Only the manager of ube wine processing enterprise from Bayabas, Sablan served as the respondent. The manager was personally interviewed and followed-up by answering the written questionnaire.

The cooperative started in ube wine processing with an initial capital of Php 100,000 granted by the local government and came from initial share capital contribution from its member.

The cooperative have invested a total amount of Php 217,727.50 in their fixed asset. The number of years to last indicates that some equipment's will still last for ten years and the least is 5 years. The equipment was used according to the stages of production in a year for ten batches.

The processing of ube wine requires workers to perform various activities in every stages. Usually it needs only three (3) to five (5) individual to work for three hours. Labor cost is computed from the allowance granted and allocated per hour basis. The workers perform various activities depending on the stages on wine processing. The cooperative personally assist the workers in various stages. The administrative function that includes bookkeeping, storekeeping and others were performed on voluntary basis.

The cost of raw materials was about Php 7,172 per batch. In every batch the cooperative processed 80 kilograms of ube with a unit cost of Php 25 per kilogram which means that costs of materials is high which affect the profit substantially. The cooperative produced 100 bottles (750 ml.) per one batch. The selling price was about Php 120 per bottle and by bulk bulk/case buying has a 4.17 discount.

The cost of production incurred by Kayabang Multipurpose Cooperative in production and marketing was in per bottle; per case basis. The total cost per bottle was about Php 121.24 and on per case basis is Php 1,103.12. The additional cost in production on per case basis is attributed to additional cost of cartoons used for the case of wine.

The benefits derived by the cooperative is based on their returns of wines in per bottle and per case basis with selling price of Php 120 and 4.17 percent discount for bulk/case buying of wine. Given the total cost in production and marketing the cooperative incur losses of (Php 1.24) per bottle and (Php 68.12) per case respectively. The losses could attribute to high cost of raw materials particularly ube and the indirect or other costs per unit of product.

The cooperative were paying their space rentals at Php 1,800 per batch while the other utilities like water and electricity had lower cost. Wherein its one main problem of the cooperative. As mentioned by the manager, the major problem of the cooperative was to acquire or purchase its own lot and the construction of a coop building in order not to rent to reduced cost on space rentals. With regards to the quality management the cooperative encountered one main problem which is according to the manager. It is a greatest problem it greatly affects the quality of the product and thus resulting to lower profit and the negative image of the product/ the problem they encountered is the high

acidity level of wine which caused the ube wines turn into vinegar. Aside from this other mentioned problem is some of equipment's cannot function because of some damages.

Conclusions

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

1. The cost incurred by the organization in the investments of fixed asset has a total of Php 217,727.5, and usually end up with not the same life span. This equipment's used in ten batches yearly and function according to the stages of production;

2. The cooperative was about spending Php 704 0f raw materials per bottle and Php 1,500 for the allowance of workers to process in one batch. KMPC process ube wine of 100 bottles (750 ml.) per batch and the selling price is Php 120 per bottle and 4.17 percent discount in the form of bulk/case buying;

3. Given the total cost in production and marketing the cooperative incur losses of (Php 1.24) per bottle and (Php 68.12) per case respectively. The losses could attribute to high cost of raw materials particularly ube and the indirect or other costs per unit of product; and,

4. The major problem of the cooperative was to acquire or purchase its own lot and the construction of a coop building in order not to rent to reduced cost on space rentals. With regards to the quality management the cooperative encountered one main problem which is according to the manager. It is a greatest problem it greatly affects the quality of the product and thus resulting to lower profit and the negative image of the product/ the problem they encountered is the high acidity level of wine which caused the ube wines turn into vinegar.

Recommendations

Based on the conclusion, the following recommendations were made:

1. The cooperative should maximize the use of equipment and facilities to increase volume of production and to reduce the indirect cost involved.

2. Raw materials and other cost should be reduced through purchasing or procurement at lower cost. That is, buying from other sources at cheaper prices.

3. KMPC should increase a little higher the price to create more return and used the waste product to develop other products to increase income. Organization must also increase the volume of production and look for another source of market for continuous to procure raw materials and where to dispose the finished product; and,

4. With the aim to have uniform taste of the ube wine products, measuring equipment should be calibrated and use during mixing process to have uniform mixture. Cleanliness and sanitation to the production site/area should also monitor and maintained to avoid contamination.

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