

BOOK OF ABSTRACTS: 2021

BSc. Food Business Management



**Department of Agribusiness Management
Faculty of Agricultural Sciences,
Sabaragamuwa University of Sri Lanka**

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Message from the Dean

Greetings and welcome to the first Undergraduate Research Abstracts proceedings 2021 of Food Business Management degree program of the Faculty of Agricultural Sciences. I congratulate all of the students who have published their cutting-edge research in Food Business Management. As this “Book of abstracts” will attest, undergraduate research is growing at the Faculty of Agricultural Sciences as it is across the nation.

To produce leaders in Food business sector, the undergraduate programs at the Faculty encourages holistic, independent and critical thinking, and use of innovative and entrepreneurial approaches through integration of modern and traditional blends and technological advancement.

The undergraduate research symposium is providing a platform for graduating students to present their valuable final year research findings and interact with experts in the sector, peers and prospective employers. This will no doubt enhance the research culture within the Faculty with some of with elements of industry collaborations. The “Book of abstracts 2021” includes 41 edited submissions from the Food Business management Degree program. The studies cover a wide range of topics related to Food business and allied areas presented in food marketing, product development, Economics etc.

I believe that the students’ response was excellent in all aspects. Many students have conducted very interesting and innovative projects with excellent outputs, some of which could be published in reputed journals after completing the work presented at the symposium producing a quality research paper. The research projects have demonstrated the capabilities of the students and the power of analytical and entrepreneurial skills.

In order for undergraduate research/creative projects to take place, faculty sponsors are indispensable. I want to acknowledge these accomplished professor, senior lecturers and lecturers who, with full teaching loads and extensive commitments to their own research, generously give of their time to mentor students in research and creative projects.

Finally, I am especially grateful to Prof D.A.M. De Silva, Head department of Agribusiness Management and the Dr. Chathurika Jeewanthi, Coordinator of the Food Business Management Degree program, without whom none of this would be possible, who is unquestionably the face and the spirit.

Prof P.M. Asha S. Karunaratne
Dean
Faculty of Agricultural Sciences

Message from the Head of the Department

Department of Agribusiness Management is the poster child of innovative university education and therefore a destination for hundreds of young learners seeking inspiration to improve their talents and skills to fit with global citizenship. Educators around the world, especially the universities, have been asking what makes some higher education systems perform better through different approaches, and why conventional institutions to be stuck without diversification. There are numerous theories of change and related programs to betterment of higher education. Some of them have proved to be successful while some of them have not. B.Sc. Food Business Management degree program, a living example of diversifying higher education opportunities to cater the needs and wants of industry. It's my pleasure, to pen opening remarks to first issue of the book of abstract compiled from the living evidences of the final year research of the B.Sc. Food Business Management undergraduates. Heartiest thanks goes to the crew behind this success story, all members of the academic staff and non-academic of the Dept. of Agribusiness Management for their enormous contributions and dedication. Further, I wish to convey sincere thanks to the Vice Chancellor, Sabaragamuwa University of Sri Lanka and Dean, Faculty of Agricultural Sciences for their kind contributions in program management. Finally, necessary requirements are an open mind to accept ideas that at first might seem strange and initial ability to understand the difference between facts and myths in educational change.

Prof. D.A.M. De Silva

Head

Department of Agribusiness Management

Faculty of Agricultural Sciences'

Sabaragamuwa University of Sri Lanka

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DEVELOPMENT OF READY TO MAKE MIX FOR TRADITIONAL DOSA

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ABSTRACT

This study was designed to development the Dosa mix from Black gram (*Vigna mungo*) Wheat (*Triticum aestivum* L) Cowpea (*Vigna unguiculata*) Yeast. Simply, this is easy and fast to prepare. Dosa is traditional fermented product in Sri Lanka. It is prepared from milled black gram dhal and cowpea and also wheat flour which are consumed mainly at the breakfast time. A generation back this was the common food of the people in this region. Here Dosa mix is prepared by using cowpea flour. Cowpea is making a comeback again as this is healthier than wheat flour. There are twenties of varieties of Dosas and each has its own unique taste. Dosa has a very prominent place on our table. The process described here is mixing cowpea flour, black gram flour and wheat flour in water followed by keeping them. Yeast is used for fermentation at room temperature ($30^{\circ} + 2^{\circ}\text{C}$) for a period of 3 to 4 hours. After that mix to water and addition of salt, turmeric powder to taste. Three formulations have been made by varying proportions of black gram flour, wheat flour, and cowpea flour proportion constant. For these three samples Proximate and nutritional analyses, and Sensory Evaluation are estimated. The storage stability was good in Ready mix with respect to color and texture. Developed Dosa Mix were stored in low density polyethylene (LDPE), high density polyethylene (HDPE) and metalized polypropylene (MP) bags and parameters such as moisture, water activity and were monitored in 14 days interval for the shelf life studies. It was observed that the product was more stable in LDPE and HDPE bags than in MP. According to the food regulation microbial count of ready to eat foods yeast should be less than 104 CFU/g. Present study revealed that sample 2 (black gram flour – 100g, wheat flour – 50g, cowpea flour – 50g, Yeast - 2g (separated small pack within dosa mix)) has given best results in terms of sensory and optimal nutritional facts compared to other two samples.

Keywords: Black gram flour, Cowpea flour, Dosa mix, Fermentation, Green gram flour, shelf life and Value Addition

DEVELOPMENT OF DRINKING YOGURT ENRICHED WITH TASTE

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ABSTRACT

Drinking yoghurt having just entered the market is making tremendous inroads into the impulse beverage category offering young adults and children a healthier and tastier beverage option.. Drinking yogurt is among the consumers due to the convenience, handiness and health benefits . The present study investigated the possibility of developing a novel drinking yoghurt with Vanilla, Mango and Faluda are flavours and its sensory quality parameters were evaluated. The lab experiment was conducted as Complete Randomized Design with three replicates. Developed product was stored at 4 °C for 28 days. Physicochemical and microbiological properties of the developed products were analysed. Sensory evaluation was done with 30 untrained panellists using nine point hedonic scales. Consumer consumption survey was conducted to investigate consumer preferences towards this developed Drinking yogurt. Data was gathered from yogurt consumers in palai area through a questionnaire of 100 respondents using simple random sampling. survey data were analyzed by using descriptive statistics. Titratable acidity and pH of the developed products were tested at 1, 7, 14, 21, 28 days and microbial counts (Total coliform, yeast and mold) were tested and physiochemical analysis were tested. Parametric data were analysed using one way Analysis of Variance and sensory data were analysed by using non-parametric test. Results revealed that values were significantly different ($p < 0.05$) among treatments. Conclusion based on sensory evaluation, Mango flavour was displayed the best organoleptic attributes compared to the other two samples. It got the highest mean values in all aspects. Drinking yogurt it contains 4.6 % fat, 0.3% salt and 20.5% sugar. Consumer consumption survey was conducted to investigate consumer preferences towards this developed Drinking yogurt. Overall, this study indicated that opinion of the respondents were likelihood consume developed drinking yogurt the majority (99%) preferred to purchase this developed drinking yogurt in the market.

Key words: Drinking yogurt, Development Process, Nutritional Benefits

ROAD TO DIGITALIZATION: DEVELOPMENT OF AN ONLINE MARKETING PLATFORM FOR NATIONAL LIVESTOCK DEVELOPMENT BOARD

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ABSTRACT

With the expansion of Covid 19, many businesses moved towards the e-market place. Accordingly, all businesses are moving towards the e-market to compete with competing businesses. Advance in technology as well as advances towards e-commerce can be considered as key factors to enter this market. As a result, the National Livestock Development Board has identified the tendency of this concept to meet this challenge successfully, and these studies provide evidence of the process leading up to the creation of the e-marketplace. The study was conducted to focus on to identify the factors that affect for implement the online market platform system in National Livestock Development Board, to design online market platform for National Livestock Development Board and to implement online marketing platform for the National Livestock Development Board. The need analysis was instrumented with interviewer administrative questionnaires, focus group discussion as well as analytical methods such as quality content analysis were used. Based on the findings, an online marketplace was created for National Livestock Development Board. As a result of this analysis the organization able to tailor the content of web design and hope to present a better web design to the customers. The online market for National Livestock Development Board was also aimed at increasing the company's profits, increasing its market share and attracting customers for the organization. This research "Creating E-Market Place was aimed to provide a standard online market where customers can buy quality NLDB product.

Keyword: Covid 19, E-marketplace, NLDB

ANALYSIS OF THE FINANCIAL VIABILITY OF ON-FARM CONCENTRATE PRODUCTION ON BEHALF OF PURCHASING FROM COMMERCIAL PRODUCERS: IN CASE OF RIDIYAGAMA DAIRY FARM

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ABSTRACT

Livestock is the premier source of milk and through that cow's milk is significant. Milk production depends on several factors, feed takes priority. The shortage and imbalanced nutrition of feed has created a trend of compound feed. One of the most usable compound feed concentrates. The feed cost is the greatest, from the input cost that impacts the profitability of the farm. Also, the interruption of the continuous feed supply impacts the production of cattle. The on-farm concentrate production is the best solution for the issues. The study focus on profitability and viability of implementation. It is based on two ration formulas as barley-based and maize-based ration. The primary data methods and secondary methods were used for data collection for a quarter of the period. Milking cows' future feed requirements were obtained through time series analysis. The analysis revealed that a higher gross profit, 25.6%, net profit 22.7%, and operating profit, 22.9% for barley-based ration and low operating ratios and expenses ratios, than maize-based ration. Appraisal methods, low payback period, positive net present value, higher internal rate of return, low discounted payback period, are also proved the higher viability of barley-based ration. The cost-benefit ratio indicates the possibility of both, but the higher barley-based one is 1.2. Sensitivity analysis was analyzed the future uncertainties that can occur, their effects. Overall, the barley-based ration has higher financial and implementation ability. Strategic management practices are recommended through this study.

Keywords: Feed cost, interruptions, rations, profitability, viability

BENEFIT- COST ANALYSIS AND SUSTAINABLE MODEL DEVELOPMENT OF VALUE CREATION IN DAIRY INDUSTRY: A CASE OF NATIONAL LIVESTOCK DEVELOPMENT BOARD-RIDIYAGAMA FARM SRI LANKA

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ABSTRACT

The dairy industry has immense potential to contribute considerably to Sri Lankan economic development. Milk production also plays an important role in improving nutritional poverty in all age groups. Milk production, particularly when practiced as a business generates income and employment for a large number of poor families, which contribute to poverty reduction. Furthermore, the milk sector promotes the economic and social roles of women in communities. The success of dairy farming, as a form of business depend on profitable milk production and marketing. This study was aimed to analysis the benefit cost of value creation of yogurt, curd and milk toffee, identify current status of Ridiyagama, identify potential value creation of Ridiyagama farm and develop a sustainable model development for value creation in Ridiyagama farm. The study was conducted reference to the NLDB Ridiyagama farm. The primary data were obtained from key informant interviews, focus group discussion with managers, assistant farm managers and supervisors of NLDB Farms. Seven indicators were calculated for estimated production; Return on investment, Net profit margin, Gross profit margin, Payback period, Net present value, Intern rate of return and Benefit cost ratio. Yogurt, Curd and Milk toffee were selected as value added process. Respectively, Benefit cost ratio was 50%, 0.2% and 48%. Gross profit margin and net profit margin had positive growth in each value added product when comparing to the raw milk selling. The milk production of Ridiyagama farm has been decrease and the farm have loss profit margin during last five year. The investment money for yogurt 350000LKR, for curd 300000LKR and for milk toffee 10000LKR. In sustainable development, socially, create job opportunity, economically profitability production of yogurt and milk toffee and environmentally, minimizing carbon foot print and waste. Suggestion the implement value addition product of yogurt and milk toffee.

Keywords: Benefit cost analysis, Dairy Industry, NLDB

THE IMPACT OF MOTIVATIONAL FACTORS ON IMPROVING EMPLOYEE PERFORMANCE: A CASE STUDY OF NATIONAL LIVESTOCK DEVELOPMENT BOARD MELSIRIPURA FARM

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ABSTRACT

The success of any business depends on motivated employees. The ability to attract, retain and develop talented employees is the key feature of increased organizational performance. National Livestock Development Board has made many efforts towards the motivation of their employees but it does not show positive results. This study undertaken in National Livestock Development Board Melsiripura farm focuses on defining the motivation concepts and methods, identifying the most motivating factors, and the link between employee motivation and employee performance. The study was used a quantitative and deductive approach. 94 casual employees(n=94) were examined to review the impact of intrinsic and extrinsic motivation on employees performance. Three motivational theories are also used to explain how people can be best motivated and insight into the human resource management paradigm. The findings show there was a positive relationship between employee motivation and employee performance. The results also show that extrinsic motivation factors (salary, Sunday/Poyaday allowance, cost of living allowance, attendance allowance) played a more significant role to improve employee performance. The results further show that employee motivation hinder factor is organization policy. However, employees were not satisfied with the current employee motivation package of the farm. It is therefore suggested that National Livestock Development Board should change organizational policy regarding farm employees to improve employee performance by improving the current employee motivational package. The report also has been discussed some of the future directions and recommendations so it may assist future researchers to study the other constructs that can affect employee performance.

Keywords: intrinsic motivation, extrinsic motivation, employee performance

DEVELOPING AN EFFECTIVE MARKETING STRATEGY TO INCREASE SALES OF NLDB UHT FRESH MILK IN MODERN TRADE

A Study Based on Colombo District

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ABSTRACT

NLDB is committed to fostering the Livestock and dairy industry in the Island by developing quality breeding material, Livestock, and agricultural products infusing new technology and innovations in due recognition of the national effort, making the country self-sufficient in Livestock and dairy products. The study identified the lack of an up-to-date marketing method for NLDB UHT Fresh milk in order to give solutions for this problem, conducted this study in the range of one hundred and twenty sample size based on the existing supermarket network in the Colombo area. In a clustered sample, subgroups of the population are used as the sampling unit, rather than individuals. The population is divided into subgroups, known as clusters, which are randomly selected to be included in the study, as part of the data collection, conducted in-depth interviews. As for the results, the study is also analyzed based on both the quantitative and the qualitative approaches. Talking about the result, the independent variable price, food safety, nutrition value has a positive effect on the purchasing intent of the consumer but the variable called 'package' comes as a negative impact on consumers purchasing intention with the findings in this sample. The reason for this was that came to know that every tetra pack of fresh milk in Sri Lanka comes with the same package in all respects and the consumer does not pay much attention to it. This study used the Ansoff matrix model for developing an appropriate marketing strategy. Since the NLDB UHT fresh milk product is an existing product and in the existing market, therefore marketing penetration strategy was chosen (give more options to the customers, introduce new variation in existing product, change opening hours of the store, reduce order processing times, showcase entire product portfolio, etc.). The feedback received from the sample customers was the lack of variations in the product, the lack of awareness about the quality of the product. We can draw conclusions from the study. Further, findings imply that convenient locations of shops and good availability of fresh milk are significant for increasing the number of milk consumers.

Keywords: Ansoff Matrix, Consumer Purchasing Intention, Fresh Milk Industry, Marketing Penetration, Tetra-Packs UHT Fresh Milk

THE APPLICATION OF RETAIL SERVICE QUALITY SCALE (RSQS) ON IMPROVING SALES PERFORMANCE: A STUDY IN NLDB SALES CENTERS

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ABSTRACT

Quality is the imperative concept in the current competitive business environment. The business should be maintained its quality whether it is a product-based business or service-based business. There are a few models such as SERVQUAL, RSQS to measure service quality in the business. These models measure the retail service quality in few aspects. There are physical, personal, empathy and policy aspects. Even though the retail sector was identified as an emerging sector in Sri Lanka, there were few researches carried out to measure retail service quality. Hence, this research has studied retail service quality using the RSQS model on milk bar and farm outlet shops in Sri Lanka. The purpose of this study was to measure service quality at the milk bar and farm outlet shops and suggest suitable solutions for improving sales performance. A purposely developed questionnaire was administrated to 230 randomly selected sample at 33 NLDB sales centres. The collected data was analysed with factor analysis and multiple linear regression using IBM SPSS version 21 software. The study results revealed that the physical aspect dimension is an impact on retail service quality rather than the other four dimensions. Also, the physical aspect dimension positively and policy dimensions negatively impact customer satisfaction. Furthermore, there is not any relationship between customer satisfaction and sales income of the NLDB sales centres. Based on the obtained results, NLDB has to improve the service quality of its sales centres in reliability, personal interaction, problem-solving and policy dimensions. This study further found that customer satisfaction was not significantly related with sales performance of NLDB.

Keywords: RSQS; Retail service quality, Customer satisfaction, Sales performance, Sri Lanka

THE IMPACT OF LEARNING AND DEVELOPMENT ON THE PERFORMANCE OF EXECUTIVE LEVEL EMPLOYEES; A CASE STUDY OF NATIONAL LIVESTOCK DEVELOPMENT BOARD

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ABSTRACT

The success or failure of organizations mainly depends on the high quality of the human resource. Executive level employees' performance is the most significant factor effect to National livestock development board. The purpose of this study was to investigate the impact of learning and development on executive level employee performance. Many organizations are providing learning opportunities for their employees, it is an issue how the company management is giving the particular learning opportunities of their workforce which directly affect the performance of employees. Learning and development factors are playing a determining role in the company to improve the performance of employees. To face those challenges employee performance must be attractive together with the industry growth. Develop the required skills, knowledge and expertise must be wide through learning and development process. This research paper is quantitative. Research data have been collected through a primary source that is from questionnaires. The research data have been tested (SPSS) statistical package to examine the impact of learning and development on employee performance. Two variables of Learning and development (Independent) and Employee Performance (Dependent) were used for this research. In sample of Two hundred fifty questionnaires were distributed for the data collection. Data were analyzed and discussed the investigate the impact of learning and development. The Pearson correlation was shown in the study and Cronbach Alpha for each questionnaire was obtained. Frequency distribution used to measure individual result of the study The results of the research provided that there was a significant relationship between an independent variable and a dependent variable. Analysis and Interpretation were made at 0.05 level of significance. This study is importance to company management and policymakers to understand the significant influence of Learning and Development on Employee performance.

Keywords: Learning and development, employee performance

MARKET ORIENTATION IN COCONUT OIL INDUSTRY IN SRI LANKA: MARKETING INNOVATION AND FIRM PERFORMANCE

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ABSTRACT

Effective marketing strategy largely depend on the firm's ability to create a competitive advantage over rivals. The purpose of this study is to analyze the coconut oil market landscape and consumer preference as preliminary sources for identify the relationship between marketing innovations and firm's performance. The study has three approaches. Market landscape analysis comprised with field visits and interviews. Consumer survey and industry survey comprised 100 consumers and 30 coconut oil manufacturing firms. Purposive sampling and simple random sampling are used as sampling techniques. Descriptive analysis, multiple and hierarchical regression analyses were used mainly to describe dimensions. Market landscape analysis shows the upgrading potentials both in local and global markets value addition, product development and both product and market diversification identified as key considerations. Consumer survey shows how the generic marketing strategy should be developed or the act of designing the company's offering which occupies a distinct position in the target group considering the marketing variables such as quality, price, health and nutritive attributes, availability, accessibility, packaging and labelling under a well stablished brand will be impressed customers to purchase. Marketing innovation in relation with firm performance has confirmed that marketing innovations has an ability to predict firm's performance, which needed the support of marketing antecedents; marketing insight and imagination. The finding of this conclude that the companies need to be success should ensure adopt and promote market-oriented approach that should become an integral part of the organization culture lead for innovative marketing strategies.

Keywords: (Market orientation, Innovation, Marketing insight, Marketing imagination, Performance)

DEVELOPING AN EFFECTIVE STERILIZATION METHOD FOR MORINGA (*Moringa oleifera*) LEAF POWDER PRODUCTION

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ABSTRACT

Within the last few years, *Moringa oleifera* became one of the best known and most widely acknowledged plant in the world, especially for its pharmacological and nutritional value. Powder form moringa leaf use in a production of wide range of convenience food. The usage of proper sterilization method can retain the nutritional and organoleptic properties of moringa. Ozone treatment is a modern, environmentally friendly alternative sterilization method which is not having any residual effect. This study was carried out to find the effectiveness of process integrated ozone treatments in washing and drying steps of moringa powder manufacturing. Samples were tested in the laboratory conditions after applying these treatments. The samples were moringa powder and a tea (liquid) which has developed using moringa powder. Sensory evaluation was analyzed using Wilcoxon signed rank test. The relative percentage composition of nutrition values, physical characteristic measurements and microorganism's measurement was compared using descriptive statistics and analysis of variance. This study highlights that the ozone treatment significantly increased the powder colour, odor, appearance, and also the tea colour, taste. The overall quality of both Moringa powder and tea has increased in ozone treated samples. Microbial count was reduced by 2 logs values in ozone treated sample. Moisture (8.49%), fat (2.06%) and ash (7.36%) content were low in ozone treated sample when compared to the steam treated sample. Low moisture contents help to increase the shelf life of the product. A higher amount of crude fiber (20.09%) was recorded in the steam treated sample. According to final measurements, the highest pH value (6.52 ± 0.0), organic matter (84.15%), water absorption capacity (6.3 ± 0.02), light green colour attributes $L^* 48.08 \pm 1.02$, $a^* -6.38 \pm 0.01$, $b^* 28.47 \pm 0.43$ and the lowest bulk density (0.2418 ± 0.00) were recorded in developed sample compared to the other sample. As per the results, the ozone treated sterilization method was identified to be more effective than the steam sterilization treatment. This method was improved the sensory properties of Moringa powder, preserved general components, physical characteristics and at the same time recorded the least microbial contamination.

Keywords: Ozone treatment, Moringa leaf powder, Moringa tea, Sterilization

DEVELOPMENT OF TRADITIONAL ROASTED CURRY PASTE (GROUNDED IN GRIND-STONE)

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ABSTRACT

Sri Lankan spices play an important role in improving the taste, aroma, and flavor of processed foods. Curry powder is the most preferred among powdered blends, it is the combination of more spices. Many housewives are very much interested in the taste and aroma of food than ever before. Although they also like to cook traditional way, they haven't time to prepare curry paste ground in grind-stone. Therefore the main objective of the research was to develop a traditional roasted curry paste using ground in grind-stone. And also specific objectives were to identify chemical, physical, microbial properties; to identify the responses of sensory evaluation in terms of color, odor, flavor, appearance, and overall quality; and to identify consumer preference towards traditional roasted curry paste. Sensory evaluation, chemical analysis, physical analysis, microbial analysis, and consumer survey were analyzed by using Freidman nonparametric test, AOAC methods, color and pH meters, total plate count, and descriptive analysis respectively. The results of the sensory evaluation from 16 panelists were selected third sample for considering the overall quality ($P < 0.05$). As chemical analysis, moisture, ash, crude fat, and crude fiber contain were showed 36.91%, 4.2%, 5.2%, and 31.2% respectively. The pH and acidity values showed that to increase and decrease respectively when storage time increased. The color was showed light-green-yellow with L^* , a^* , and b^* values 29.88 ± 0.28 , 1.62 ± 0.04 , and 1.43 ± 0.11 , respectively. Total plate count (TPC) was increased, but the growth rate was a slowdown in 5 days. Also, consumer survey results revealed that 93.7% of consumers are like to buy traditional roasted curry paste from the market. And also 67.57% of consumers are like to pay a higher price for it. The benefits from this research could promote traditional roasted curry paste grounded in grind-stone while helping those who like to consume curry paste from grounded in grind-stone.

Keywords: Curry paste, traditional, spices, sensory evaluation, grind-stone

PROCESS DEVELOPMENT FOR MINIMIZING THE LEAD TIME PERIOD OF SPICE SUPPLY

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ABSTRACT

Achieving a minimum lead-time period of supply chain is a competitive advantage for a business. DMAIC (Define, Measure, Analyze, Improve, and Control) methodology is one of method of six sigma which is used for development of a process. The main aim of this study was to develop a process for minimizing the lead-time period of supply of spices ingredients. Other objectives of this study were to determine the existing process in “Define phase”, measure the sources which affect the lead time in “Measure phase”, analyze the root causes of the focused source in “Analyze phase”, identify creative solutions and develop a process in “Improve phase” and create a procedure to maintain in “Control phase” in accordance with the DMAIC approach’s process. The 40 participants in supply process from farmer to the factory were selected as the sample by stratified random sampling technique. Case study and the survey were used as research strategies. This study utilized the six sigma tools namely SIPOC diagram, brainstorming, pareto charts, cause & effect diagram, cause & effect XY matrix, affinity diagram, AHP matrix and the control plan. The SIPOC diagram defines the current process of the business. The highest weighted value of 276 has taken at the delay of sourcing the spices. The delay of checking details and selecting a farmer by field officer were the most focused problems in this study. The cause-and-effect diagram resulted the five root causes of focused problem. Solutions were gathered by brainstorming with the selected participants. Affinity diagram selected the solution category of systematic way to manage data. 0.69669 W matrix value of introducing a software was the optimum solution due to the AHP matrix. An information automated software was developed at the improve stage and it was controlled by a control plan.

Keywords: Automated, Competitive Advantage, Lead Time, Six sigma

PROCESS IMPROVEMENT OF NUTMEG QUALITY: EXPLORATORY RESEARCH ON NUTMEG SUPPLIERS IN MATALE AND KANDY DISTRICTS

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ABSTRACT

Nutmeg cultivation covers a total area of 2788ha in Sri Lanka, with small and mid-scale farmers owning 80% of the plantations in Kandy district. Quality nutmeg is characterized by a delicate aroma. The nutmeg is the kernel inside the fruit pit, and mace is the bright red or purple lacy covering on the pit. This study focuses on process improvement of nutmeg quality on smallholder nutmeg farmers in Matale and Kandy districts. The research focused to identify the most affective physical quality parameter in process improvement on nutmegs. The dimensions of physical quality parameters are flavor and color, extraneous vegetable matter, foreign matter, visible mould, dead insects, insect fragments, rodent contamination, live insects and mammalian or other excreta. Multi-stage cluster sampling technique was used. The sample was composed size of 27 smallholder nutmeg farmers in Matale and Kandy districts. Survey strategy was used to collect primary data. Primary and secondary data were used for the study. Exploratory factor analyze was used to determine visible mould (Factor Matrix=0.862) as highest factor loading. Two-way ANOVA was used for the data analysis. The reliability of physical characteristics was higher compared to flavor and color of physical quality parameters. Both male and female nutmeg farmers engaged in nutmeg cultivation. Results revealed that the decision-making power was concentrated among males. There were significant differences between physical characteristics ($P=0.040$) and no significant differences between flavor and color ($P=0.349$). Hazard analysis chart and action plan were identified as tools for process improvement. Implementation of preventive programs, effective drying methods would help for further process improvement of nutmegs.

Keywords: Nutmeg, Physical quality parameters, Process improvement

THE PERFOEMANCE OF VALUE-ADDED TEA EXPORT: SPECIAL REFERENCE TO THE AMAZON TRADING (PVT) LTD

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ABSTRACT

Competition in value added tea export market is very high. In Sri Lanka there are number of value added tea export companies and there is a high competition between them. It will be useful for companies to identify the most important strategies for to enhance the performance. The purpose of this study was to examine impact of cost leadership strategy, differentiation strategy and focus strategy on performance of value-added tea export.

The research based on secondary data and 5 years monthly data gathered from financial statement, marketing and sales reports from the Amazon Trading (Pvt) Ltd. The researcher has used descriptive analysis and multiple regression analysis for that Statistical Package for the Social Science (SPSS) as the main analytical software.

The result of the study discussed the main three factors affecting the value-added tea export for company performance and results indicate that differentiation strategy and focus strategy have positive impact on the performance. As per the results, cost leadership strategies are not providing significantly impact on the performance. Based on above finding, it is concluded that competitive strategy should be implemented to boost the performance of value-added tea export.

Keywords: Porter's generic competitive strategy, Cost leadership strategy, Differentiation strategy, Focus strategy, Value-added tea export company performance.

THE CHOICE BETWEEN DIFFERENT FARMING PRACTICES IN THE CULTIVATION OF TEA IN SRI LANKA: ORGANIC VERSUS CHEMICAL?

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ABSTRACT

The main purpose of this paper to estimate how farmers' knowledge applies for reduction of chemical fertilizer during their farming practice for protect biodiversity using a choice experiment method (CE). These includes: the protection of the long-term fertility of soil, using Mechanical intervention carefully and marketing value of certified organic products. The design of choice card was guided by literature review and government policies. To analysis the data collected, the study used SPSS software particularly to generate an orthogonal main-effects for CE design. The data used was generated from a random sample of 254 farmers who are organic and non-organic tea farmers in Sri Lanka. Results of conditional logit model indicate that farmers are mostly preferred and significant preferences for the protection of the long-term fertility of soil, using mechanical intervention carefully and marketing value of certified organic products. According to the first attribute farmers are highly preferred for "medium level of biological activity and the use of medium synthetic chemical fertilizer and pesticides" than 100% of participation for organic farming. Using mechanical intervention carefully was not significant determinant for farmers' choice because that factor was not significant. Marketing value of certified organic products was a significant determinant for farmer's choice and the best selection was "more than 30% of non-organic farmers' price'. These findings can provide policy makers relevant evidences for agricultural policy design to build farmers' resilience in Sri Lanka.

Keywords: Organic farming, Conventional farming, Choice experiment, biodiversity

IMPLEMENTING 5S SYSTEM AND THE DOCUMENT NUMBERING SYSTEM TO ENHANCE THE PERFORMANCE OF THE DOCUMENTATION PROCESS IN THE QUALITY ASSURANCE DEPARTMENT OF HJS CONDIMENTS LIMITED

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ABSTRACT

5S (Seiri, Seiton, Seiso, Seiketsu, Shitsuke) is a simple but effective lean manufacturing methodology that helps organizations to simplify, clean and maintain a productive work environment. In order to regulate the documentation system company can implement different tools. Among those tools 5S system is a primary tool that can use to make the process efficient. Objective of this study is to successfully implement 5S and the document numbering system to the documentation process of the quality assurance department in the HJS Condiments Limited to enhance the performance of the documentation process. This study was conducted by using a case study and the purposive sampling was used as the sampling technique. The employees were taken as the respondents who handle the documents, and use the documents and data was gathered using score card. To successfully implement 5S and the document numbering system PDCA cycle was used. All the issues were identified with the documents and files were replaced and made in a correct order with relevant to the five steps in the 5S. After implementation, to find out whether the performance has enhanced collected data was used. Respondents who are the employees within the quality assurance department have given a score for each task and all the scores were calculated and got the total marks before and after implementation. According to the findings of the study overall performance has enhanced by 41% and the searching time of documents has saved by 64%, 2.5 hours per month per person. Space utilization has been reduced as the unnecessary documents were removed and remaining documents were kept up to date. Not only that employees have motivated and gain more interest to work in that clean and tidy working environment and it has made their job easier and more comfortable.

Keywords: 5S, Document Numbering System, PDCA Cycle, Performance Evaluation

THE IMPACT OF BRAND EQUITY ON CONSUMER PURCHASING INTENTION OF SPICES: A STUDY IN THE KESBAWA REGION

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ABSTRACT

Spices are highly commercially valued commodities where Sri Lanka has been exporting to a number of countries. Apart from the international market, spices can be value added for the local market as well and applying 'branding' is one of the major ways to implement that. The main objective of the study is to find out the impact of brand equity on consumer buying behaviour. According to that geographically targeting, three Grama Niladari divisions of Kasbawa divisional secretariat which are Boralasgamuwa East A, Bokundara and Madapatha were selected. Among the selected geographical locations, 150 of 'consumers who has branded spices purchasing experience' were particularly concentrated. Followed sample strategy was 'stratified sampling' and all the selected respondents were belongs to the 'above 18 female category' assuming that particular group are primarily targeting in the spice market. The study was based on 'Aaker's brand equity model' focusing on variables of brand awareness, brand association, brand loyalty, perceived quality and purchasing intention. Data has been collected using survey strategy and data analysed using factor analysis, structural equation model and descriptive statistics. According to the results three factors were defined as 'brand familiarity', 'brand resonance' and 'non-product related attributes'. Further found out that there is a significant impact of brand awareness, brand association and perceived quality on brand loyalty of spices. Apart from these findings the study provide suggestions which were derived from the collected data. Proposed suggestions for the further devolvement of the commercialising of spices are improving the packaging material to biodegradable environmentally friendly materials, concerning on ingredient branding and following sustainable trends.

Key words : Brand Loyalty, Brand Awareness, Spices

CONSTRAINTS AND OPPORTUNITIES FOR MUSHROOM CULTIVATION BY RURAL WOMEN

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ABSTRACT

Mushroom cultivation in is mostly done at household level as a small business by women. Even though there is a good market demand for good quality mushrooms in Sri Lanka, most cultivators fail to meet the demand and required quality. It has been observed that many of the mushroom farmers in Sri Lanka give up the business due to various constraints. Hence, this research intends to analyze the constraints and opportunities for rural women mushroom farmers. A sample of 30 rural women mushroom farmers were selected from Weeraketiya DS division. The data was collected administering a questionnaire using semi-structured interviews. Henry Garrett Ranking method and Exploratory Factor analysis were used for data analysis. Results revealed that poor access for market (Factor matrix = 0.890 and 1st Rank) is the major marketing constraint for women farmers. Majority of respondents reported that high incidence of insect-pest and diseases badly affect the mushroom cultivation as technological constraint. And also, majority of respondents expressed as situational constraint of that there is an unavailability of quality spawn on time. The study revealed that women farmers have not received proper training. The marketing constraint was among the most critical constraint in mushroom cultivation with less remunerative price, lack of regular market, and lack of organized marketing channels which hampered the expansion of profitable endeavor.

Keywords: Mushroom cultivation, Constraint analysis, Opportunities, Rural women cultivators

THE ECONOMIC EMPOWERMENT OF RURAL WOMEN IN THE HAMBANTOTA DISTRICT THROUGH MUSHROOM CULTIVATION

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ABSTRACT

Mushroom is considered as one of the important food items rich with nutritional and medicinal value. Mushroom cultivating in Sri Lanka is mostly done at the household level by women. There are only few private and state institutions engaged in spawn production and training. However, the industry has the potential to develop as large-scale commercial business. The main objective of this study is to assess the economic empowerment of the rural women farmers through mushroom cultivation. Thirty members of four farmer organizations operating under the SLCDF sponsorship in the Hambantota district were selected under the cluster sampling method and used as a sample of the study. The data were collected through questionnaires and telephone conversations. Data analysis was performed through descriptive method and cost benefit analysis. All the cultivators were engaged in mushroom cultivation with the aim of becoming economically independent (Mean = 1.10 as the 1st rank of engagement reasons). There has been an economic incentive for growers to stay in mushroom cultivation because it is a quick way to make money (Mean=1.13). All growers engage in cultivation with the knowledge, training, and guidance provided by NGOs. (Mean = 1.10 as the 5th rank in the NGO contribution). All growers receive a minimum yield of more than 30 kg per month. They are packaged in 175 grams each and sell for 60 rupees. The remaining raw mushrooms are dried and ground into powder and sold for 120 rupees per 100 g pack. 80% of growers have been able to achieve the corporate target of earning 20,000 rupees per month and 76.6% have been able to achieve their expected income level. Given the social acceptance of the business, mushroom cultivation can be identified as a profitable business with future prospects.

Keywords: Hambantota, Mushroom, Rural Women, Economic Empowerment

THE IMPACT OF HUMAN RESOURCE MANAGEMENT SYSTEM (HRIS) ON PERFORMANCE OF RASODA DAIRIES PVT LIMITED

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ABSTRACT

Over the last decades there has been a considerable increase in the number of organizations gathering, storing and analyzing information regarding their human resources through the use of human resource information systems (HRIS). Today, many organizations transform their HRM functions from the manual work processes to the computerized work processes. Primary purpose of this study is to investigate and evaluating the impact of the HRIS performance of Rasoda Dairy (Pvt) Ltd. Furthermore, this study pays attention toward the determining the functions of the HRIS. Its impact to the performance of company, and identifying the problems when maintaining implementing the HRIS to the Rasoda Dairies (Pvt) Ltd. Furthermore this study tries to find out the current usage of this portal to the company and what is the preferable function of the company are in HRIS.

Further this study mainly functioning on five factors (E-Recruitment, E-Trainings, E-Payroll, E-Performance Appraisal Module and Employee self- service module) on the HRIS System. Quantitative analysis use collecting the data from the Managers, HR managers, staff, IT, staff salary dept., Staff, Staff assistant of Rasoda Dairies PVT Limited. 120 Employees were considered as the sample of the population and were collected data using a questioner. Descriptive statistics, correlation and regression analysis techniques were used to analyze the data. The results of this study, survey revealed that HRIS module have directly impact on effectiveness of company performance and average level usage of HRIS that is 50% - 80%. Further it explains that recruitment, pay management function and training & development functions are the most effective functions. The study was based on all the human resource information systems to gain more generalized results.

Keywords: Human Resource Information Systems, Job Performance

A STUDY OF FACTORS AFFECTING ON EMPLOYEE JOB PERFORMANCE: SPECIAL REFERENCE TO SEHANI DESHIYA OUSHADA (PVT) LTD

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ABSTRACT

High satisfied employees are the key of any kind of organization to perform well in particular industry. The study was carried as special reference to Sehani Deshiya Oushada Pvt Ltd which is engaging in food and spice dehydrating. The aim of this study was to identify the factors affecting on employee job performance, to analyze the relationship between internal marketing factors and employee job performance in SDO (PVT) Ltd and to suggest proper strategies to overcome less employee job performances. The primary data was collected by using interviewer, administrated questionnaire and focus group discussion. The sample size was 100 employees of the SDO Pvt Ltd. The collected data were analyzed a descriptive statistics and regression analysis using SPSS 22.0. The finding of the study showed that factors of internal marketing have significant strong relationship with job performance. A multiple regression analysis is an effective method to analyze such relationships and the Adjusted R^2 is 0.959 which suggests that closely variation in the job performance can be explained and effect by the factors of internal marketing. According to the results, the model is significant at 1% level, as sig value is 0.000 ($P < 0.001$). It is indicated that the significant relationship exists between factors of internal marketing and employee job performance. Further, employee job performance reduces by many factors. Such as lack of facilities in work environment, lack of training program, Lack of problem-solving ability. The study suggests strategies to improve employee job performance using the employees benefit plan such as established fund and pension scheme, organize award ceremony, provide health and insurance facilities, establish employees counselling program, established proper working environment and career development programs and developing employee brand using the social media.

Keywords: Employee Job Performance, Internal Marketing

COMPREHENSIVE STUDY ABOUT CURRENTLY AVAILABLE ORGANIC PRODUCTS IN SRI LANKAN MARKET FOR A SUPPORTIVE DATABASE TO EXPORT DEVELOPMENT BOARD'S PROMOTIONAL CAMPAIGN ON ORGANIC PRODUCTS

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ABSTRACT

Organic concept of food is a trending concept in Sri Lankan community due to the promised health benefits and with the increasing patients from non-communicable diseases. Organic products export industry is well-established in Sri Lanka but organic product availability in local market is too little and unorganized. National Organic Control Unit (NOCU) is the authorized party which has a power to take decisions regarding production and exportation of all the organic products in Sri Lanka. However, NOCU also do not have much details of local market. This study emphasizes the range of organic products in the local market with the certifications owned by each organic product, labeling requirement fulfillments according to SLS 1324 and Export Development Act No. 40 of 1979 and packaging materials that used to package the organic products. The analysis focused on local food markets in Colombo District. After visiting 25 organic shops which located at Colombo District, 442 organic products were identified and descriptive statistics were used to explore the results. The mostly available organic product category in the local market is processed food category (64%) compared to fresh food and raw food categories. Among processed foods, seasoning items (26%) have high market presence; spices and condiments (71%) are the mostly available food category, under the seasoning items. Every organic products correctly follow the labelling requirements. Most of the organic products are labeled as "Organic" and mostly used organic certifications are United States Department of Agriculture (USDA) and European Union organic certification (EU) in the local market; as a percentage it is 34% and 35% respectively. Paper pouches, polythene packages and glass bottles used mostly to package organic products and it is 23% of the total presence. More than a half of the organic products are processed food-seasoning items which mostly used USDA and EU certifications and only one product use Sri Lankan organic logo and every organic product follows the correct labeling regulations.

Key Words: Organic Products, Organic Certifications, Labeling and Packaging, Colombo District, Sri Lankan Organic Logo

IMPACT OF SERVICE QUALITY PERSPECTIVES OF FOOD SERVICE PROVIDERS ON CUSTOMER SATISFACTION: A CASE OF QUALITY CONTROL UNIT OF DEPARTMENT OF FISHERIES AND AQUATIC RESOURCES

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ABSTRACT

Over the past few decades, techniques of measuring service quality gained a significant attention of scholars due to the rapid growth of service sector. Improvement of the service industry, many government organizations are pay attention to improve the quality of their services especially, the ones concerning to the private sector. In this study attempt to address the investigate and evaluate the impact of service quality perspectives of food service providers on customer satisfaction in department of fisheries and aquatic resources. further, give right idea to fill the existing service gap between the food service providers and the customers constructively by using questionnaire result and interview results. Interview and questionnaire results are supported by the SERQUAL model with reference to the Quality control unit of department of fisheries and aquatic resources. Both qualitative and quantitative analysis involved to the data collection. Primary data were collected from Three face to face interviews from the 3 service providing officers in the quality control unit of the department and questionnaire data were collected from 50 customers who had visit and get services from the quality control unit of Department of Fisheries and aquatic resources. Both descriptive and statistical tests were used to analyze the questionnaire findings. The result has shown that the existing gap between the Expected and actual status of the mentioned five dimension of the SERQUAL model. This study shown the service gap between the food service providers and customers is the differentiated services and the service promptness. provide differentiated services to customers and increase the officer's workload rather than the previous. Those suggestion help to improve service quality in the quality control unit of Department of Fisheries and aquatic resources.

Keywords: Service Quality, SERQUAL Model, Customer Satisfaction

A STRATEGY DEVELOPMENT IN WASTE MANAGEMENT AT THE INTERMEDIARY LEVEL IN FRUITS AND VEGETABLE INDUSTRY: A CASE STUDY WITH BIYO NATURAL (PVT) LTD

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ABSTRACT

One third of the world food production is wasting on the way from farm to plate. Large amount of vegetables are wasting in the various stages in the supply chain. Therefore, it is important to study the whole fruit and vegetable supply chain and find out the remedies to develop Sri Lankan vegetable industry. The objective of this study is to provide strategic solutions for the fruits and vegetable wastages of the supply chain by identifying the potential factors for the wastages. This study was conducted by employing a case study. Purposive sampling is used as the sampling technique. Responses will be collected through interviews from 10 employees, questionnaires from 35 GAP certified farmers and direct observations. In this study, initially waste streams were quantified and identified the causes for those wastages by using a supply chain map. Then analyzed the vegetable wastages using waste management decision tree with five performance indicators. According to the results, high percentage of wastage is recorded at grading, storage, transport and field stage in the supply chain. Out of the vegetable varieties tomato, leeks, cabbage create high percentage of wastages, which represent 19.8%, 18.8% and 18% respectively. Lack of cold storage utilization was a major reason for wastages at processing stage while inappropriate storage facilities was a major reason for wastages at the field. By analyzing the reasons for the wastages and the present waste management practices there is an opportunity to valorize those wastages to maximize the profits, as they provide agro products using online platform. Inedible wastages can be used for compost manufacturing and animal feeding. Out of specification, fruit and vegetable can be used to manufacture value added products. Thus, the stakeholders have to pay attention on occurrences of fruit and vegetable waste along the stages in the supply chain by integrating supply chain stages, optimizing technologies and implementing a traceability system. The findings of this study will be useful for the stakeholders who are involved in the supply chain to provide strategic solutions for the wastages by using wastages as an economic generator.

Keywords: Fruits and vegetables, Post-harvest losses, Strategies, Supply chain

DOES EMPLOYEE WORK ENGAGEMENT ENHANCE ORGANIZATIONAL COMMITMENT?

A CASE STUDY ON A SELECTED SRI LANKAN POULTRY COMPANY

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ABSTRACT

One of the most crucial objectives for any organization is to improve organizational commitment. This is because fully committed personnel can influence the overall performance of the organization. Although organizational commitment is one of the most thoroughly explored topics in the field of business management, there seem to be few studies on Sri Lankan context. The primary goal of this research is to see how work engagement affects organizational commitment in a Sri Lankan poultry company. The data was obtained through surveys from 70 employees at a selected Sri Lankan Poultry company. According to results, employee work engagement has a considerable positive link with organizational commitment. It was also revealed that the absorption dimension was also discovered to have a strong positive impact on organizational commitment. Finally, the findings of this study proved that employee engagement had a considerable positive impact on organizational commitment. These findings provide useful insights and recommendations for selected Sri Lankan Poultry sector' company.

Keywords: Absorption, Dedication, Organizational Commitment, Vigor, Work Engagement

THE STUDY ON THE IMPORTANCE OF MARKETING FOR PALMYRAH PULP BASED EDIBLE PRODUCTS AMONG PEOPLE IN JAFFNA

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ABSTRACT

As globalization progresses, people are exposed to varieties of edible items other than the regional products. Palmyrah products are considered as the native and one of the regional products especially available in the Northern Province hence fairly restricted to tamils. Number of studies conducted on marketing for palmyrah products is limited. Aim of this article is to study how the marketing elements can have impact on the purchase decision of consumers towards the palmyrah pulp based edible products. This study is important to the producers and marketers of palmyrah products as it reveals which of the marketing strategy affects the consumer purchase decision. Palmyrah products are considered as the native products of the district Jaffna. The production of palmyrah products has the history of more than decades and the case with the palmyrah products which was encountered is, they market for palmyrah based edible products is at the lower levels. Five pulp-based products were selected and consumer preference towards those products was studied. A quantitative study with a self structured questionnaire was utilized. Data were collected from 115 respondents from Jaffna administrative area. Linear regression analysis was employed to analyze the data. Collected data were analyzed using the software SPSS. The study has revealed that consumers prefer to consume the pulp products for its taste. Though there are new palmyrah based products available in the market like pulp ice cream people still love to have the products like pinnattu and panam paniyaaram. Even the marketing strategy price too had significant impact on the purchase decision towards the pulp products. Data are collected from a relatively small convenience sample and that limits the generalisations of the findings. Beyond that the study has been carried out in Jaffna so that the research area is limited to a particular place. This study will be helpful to the marketers of the pulp products to meet the consumer demand and to develop the products by considering impact that the variables product, price, place and promotion factors have on the purchase decision towards the palmyrah pulp based edible products.

Keywords : Palmyrah pulp products, consumer preference, purchase decision, marketing strategy, regression analysis.

EFFECT OF ORGANIC INPUTS TO CONTROL BANANA RIPENING RATE (“Kolikuttu Banana”) BASED ON AMBIENT TEMPERATURE AND TIME TAKEN TO REACH END CONSUMERS

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ABSTRACT

Banana exporting is a major source of income and foreign exchange of the Sri Lanka. However, Sri Lankan exporters have failed to deliver a high quality product to the final consumers due to the lack of proper methods of controlling banana ripening. This study was an attempt to assess the healthier organic treatments for controlling banana ripening, based on temperature conditions and time taken to reach end consumers in those countries. The main sensory attributes of banana that are considered by the potential consumer are appearance, taste, aroma, peel color, mouthfeel, texture, and overall acceptability. According to this study, Bananas treated with a mixture of orange peel (100mg) + water (100ml) was able to maintain shelf life by controlling banana ripening up to 12 days in climates with an average temperature of 30°C. Other treatments included with that were orange peel mixture (50mg) + water (100ml), orange peel mixture (150mg) + water (100ml) and orange peel mixture (200mg) + water (100ml). They had received 9 days, 10 days and 11 days respectively for banana ripening. Furthermore, Control and Treated banana samples were stored at the average temperature of 7°C. These banana treatments have taken more than 25 days for ripening within that temperature range. In cold climates, where the average temperature is -10°C, the appearance of bananas were exhibited as blacken color and these remedies were not effective under that temperature. These analyses showed that, Treatment13 with Temperature 30 °C was comparatively the best orange peel mixture to reduce the de-greening of ‘Kolikuttu’ banana and thus increase the self-life without affecting consumer preference.

Keywords: Banana, ripening, orange peel, temperature

VALUE ADDITION TO STRING HOPPER USING JACKFRUIT FLOUR: DIFFERENT VERSION OF UTILIZATION OF JACKFRUIT

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ABSTRACT

The jackfruit, *Artocarpus heterophyllus* Lam., is considered as the world's largest edible fruit that is high in carbohydrates, proteins, vitamins, minerals and phytochemicals, including several other nutrients. Because of its anticarcinogenic, antibacterial, antifungal, anti-inflammatory, wound healing, and hypoglycemic properties, the fruits, leaves, and barks of the Jack tree also have been widely utilized in traditional medicine. However, the fruit is underutilized in commercial processing in the locations where it is cultivated. As the desire of consumers for healthy eating, foods with potential health-promoting features, such as Jackfruit, are gathering a lot of attention. Therefore, this study was conducted to investigate the market acceptance to string hopper flour made out of jackfruit bulbs blended with wheat flour. A Jackfruit string hopper flour mixture was prepared using a combination of wheat flour and jackfruit bulb flour. Different percentages of jackfruit bulb flour were added to the wheat flour and the most preferred level was selected by a sensory panel. Also, this study was undertaken with the objectives of estimating the functional properties, nutritional quality, and utilization of jack bulb flour in present food. The bulbs were peeled, dried and milled into flour. The functional properties indicated that the jack bulb flour had 60.9 per cent of water absorption. The overall acceptability of string hopper with jack bulb flours and wheat flour was 1:9 ratio below 25 was judged as very good. The nutritional value of created string hopper flour ratio had moisture content, protein and ash as 13%, 10.9% and 0.812% respectively. The sensory evaluations of string hopper products ranged from 4 to 5, indicated that the products are well received. The study highlights the importance of popularizing and increasing the product's availability in order to increase market potential and expand the market. According to the current market analysis, the product has a high probability of commercial acceptability and a large purchasing capacity.

Keywords: Jackfruit, jackfruit bulbs, jackfruit flour, new product, string hopper flour

OPPORTUNITIES AND CHALLENGES IN MARKETING OF ORGANIC FRESH FRUITS AND VEGETABLE FROM THE PERSPECTIVES OF CONSUMERS AND RETAILERS: A CASE STUDY IN KALUTARA DISTRICT

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ABSTRACT

Presently in Sri Lanka, organic agriculture has received renewed attention. However, organic agriculture in Sri Lanka remains far from the scale, investment and demand to achieve the desired growth in the sector. In this context, this study aims to analyze the opportunities and challenges of organic fruits and vegetable marketing from the perspective of consumers and retailers. Data were collected from the two stakeholder groups consisting of 202 consumers and 27 organic fresh fruits and vegetables retail shoppers using structured questionnaires. The questionnaire for consumers was designed to investigate the level of intention towards purchasing organic fruits and vegetables under five categories such as product quality, service quality, health consciousness, price fairness and customer loyalty. The questionnaire designed for retailers covered the challenges they have to face including financial, social, technological and economic. Linear regression and descriptive analysis using the SPSS software was performed. The results of the statistical analysis revealed that all five factors positively impacted the consumers' purchasing intention. It was also revealed that health consciousness and product quality was the most important factors that had the most influence on purchasing intention of organic fruits and vegetables in Kalutara District. Consumers were willing to pay premium prices for certified, high-quality products given the availability in retail shops. Most of the speciality shops are small in scale and have issues with acquiring adequate stocks from suppliers for reasonable prices. It was also revealed that the retail community had a poor understanding of the organic production concepts and certifications. Both consumers and retailers had a negative perception towards the governments' new agriculture policy on organic agriculture by imposing a sudden ban on imports of synthetic fertilizer and agrochemicals. The findings of this study can be helpful for stakeholders involved in organic agriculture to craft strategies to develop the retail sector to create a win-win situation for the retailers and consumers.

Keywords: Opportunities and challenges, organic fresh fruits and vegetables, purchasing intention, retailing, Kalutara district

FACTORS AFFECTING CONSUMER BUYING BEHAVIOR TOWARDS FRESH ORGANIC VEGETABLES IN THE COLOMBO DISTRICT

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ABSTRACT

Consumer awareness and purchasing intention are known to be the most important factors that affect consumer buying behavior towards fresh organic vegetables. Today, consumers' awareness and knowledge are high about the adverse effects of conventionally produced food, especially vegetables. In the Sri Lankan context, there is a 'niche' market for organic food. However, recent studies show consumers in the urban areas are gradually shifting to organically produced food especially considering the health and nutritional benefits. Against this backdrop, this study aims to investigate the influence of consumer awareness about organic food, consumer purchasing intention, and consumer awareness about organic food certifications on consumer buying behavior of fresh organic vegetables. This study was conducted in the Colombo District using a structured questionnaire covering a sample of 110 consumers visiting main fresh food outlets. The data was collected by both physical and online modes. The findings of the study revealed that consumer awareness about fresh organic vegetables, organic food certifications, and consumer purchasing intention towards organic vegetables positively influenced consumer buying behavior. The study suggests that enhanced consumer awareness on organic food and certification along with strengthening factors related to purchasing intention may help to convince consumers to buy fresh organic vegetables. The findings of this research will be useful for stakeholders in the fresh organic food business to develop strategies to promote fresh organic vegetable production and marketing.

Keywords: Consumer awareness, consumer behavior, fresh organic vegetables, organic food certifications, purchasing intention

LEAVES TO TASTE: DEVELOPMENT OF THE TRACEABILITY SYSTEM FOR CEYLON TEA VALUE CHAIN

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ABSTRACT

The traceability of agro-products is very crucial as the food with known and guaranteed origin charged a high premium while the authenticity of the food product. The adulteration of agro-products with cheap ingredients or chemicals poses a serious health issue to the consumer. As a result that, there is a clear need to demonstrate these authenticity problems by modern analytical techniques. This study is aimed to identify the value chain members in the Ceylon tea value chain, to identify the drivers of designing the traceability system for the Ceylon tea value chain, to develop a blueprint for the compliance level of the Ceylon tea value chain, and to design and implement the traceability system for the Ceylon tea value chain. The traceability system for the Ceylon tea value chain is very important because it is characterized by its wide place of production and complicated produce environment. Therefore, it is hard to evaluate the quality and authenticity of the tea. However, consumers are paying more attention to the quality of tea and expect to know where tea was planted, where tea was manufactured, stored, transported, and in which store the tea was sold. The research method which used in this research is the Focus group discussion for identifying the drivers of traceability. The main drivers are food regulations and food safety issues. This research tries to implement a Traceability system on this subject, by implementing a modern information technology system to manage the Ceylon tea industry.

Keywords: Traceability System, Ceylon Tea Industry, Tea Value Chain

DEVELOPMENT OF A MARKET SEGMENTATION MODEL FOR CEYLON CINNAMON (*CINNAMOMUN ZEYLANICUM*) OIL INDUSTRY – A CASE STUDY ON SAMAGI ORGANICS

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ABSTRACT

The need for Sri Lankan spice export industry to modernize existing business processes is a necessity to gain a competitive edge over global competition. Ceylon cinnamon has faced stiff competition in global markets in recent years and value additions such as essential oil extraction is a method of diversifying incomes of export organizations. When addressing new markets, it is vital to have a clear understanding of the target market. The purpose of this research was to develop a segmentation model for the case company that can be used to get a better understanding of the buyer organizations involved in the cinnamon oil value chain. The segmentation of industrial markets has been less present in literature given the complex nature and heterogeneity of these markets. The study involving the intuition of the management of the case company and options of buyer's organizations resulted in the development of a segmentation model using the nested approach to segmentation.

By using the nested approach two target segments were identified, the first one is cinnamon oil related product manufacturers and the other one is trade and distribution organizations of cinnamon oil. These two segments displayed different needs and characteristics which need to be taken into consideration in future marketing communications to better address the target segments. The analysis also revealed a gap in the exciting product offering of the company and the needs of the customers ranging from lack of quality standards to lack of information availability online. These gaps were identified and recommendations for mitigation were given to better meet the needs of the customers. This research attempted to address a poorly addressed area of existing literature in Sri Lankan context and bring practical relevance to the industry.

Keywords: B2B marketing, Cinnamon oil, Market segmentation, Nested approach

IMPLEMENTATION OF BRITISH RETAIL CONSORTIUM (BRC) FOOD QUALITY MANAGEMENT SYSTEM IN CINNAMON PRODUCTIONS.

Special reference to: Samagi Spice Exports (Pvt) Ltd.

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ABSTRACT

Food safety and quality management are an important part of an organization's system for the protection and assurance of human health. Implementing standards in the food industry enables us to effectively manage the food company by minimizing food safety risks and increasing the food manufacturer's ability. The purpose of this study was to analyze the process of applying the British Retail Consortium (BRC) Global Standard to cinnamon production and explore the modifications necessary to adopt the BRC Global Standard, as well as to discuss the challenges and opportunities when implementing the certification. By this research it was Investigate the current GAPs in the company using a Self-Assessment Tool which was developed as a table including fundamental system operating instructions, observational points, and self-questions based on the BRC regulations. It is mainly divided into seven main sections. including management commitment and continuous improvement; a food safety plan for hazard analysis and critical control points; the food safety management system; site standards; product control; process control; and personal. And also, structured interviews were conducted with the quality assurance manager and two senior quality executives to achieve the objectives of the study. Under the critical findings, lack of proper segregation; inappropriate airflow effects; need for proper sanitary requirements; and potential cross-contamination risks were identified. The findings revealed that the main factors for the adoption of the BRC food safety and quality management system were related to achieving better control over the production, boosting the company's morale, and demonstrating the advantages it provided; certification implementation for mostly to address the European Union and reach the requirements of other major exporting destinations; and doors being open for new international markets as a great marketing tool, which led to a long-term stable relationship with current clients. Time management and planning for implementation, along with the highest level of employee commitment and changing attitudes to create a quality culture in the organization, will lead to the successful implementation of BRC.

Keywords: Quality Management, British Retail Consortium (BRC), GAP Analysis

DEVELOPMENT OF MUSHROOM BASED MEATBALL

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ABSTRACT

Though meat is the major traditional ingredient used in meatball production, there is an increasing demand in the present market for a plant based meatball due to the health hazards led to high meat consumption. Button mushroom (*Agaricus bisporus*) is a common mushroom used in many dishes such as salads and pizza due to its taste and texture. Button mushroom has a high nutritional value due to high level of vitamins and proteins and its non-saturated fatty acids. The consumption of Button mushroom reduces the cholesterol levels remarkably and has also been attributed anticancer properties. Hence, the study was carried out with the objectives of a developing a new meatball for the Pussalla Meat Producers(Pvt)Ltd and to determine its sensory values and proximate analysis. It was also expected to determine the best proportion of mushroom and meat combination for the development of new meatball for the Sri Lankan food market. Two meatball types was prepared using mushroom and meat percentages of 10:90 (L1) and 20:80 (L2) respectively. After preparation, samples were tested for moisture, fat and ash to determine chemical analysis. Sensory evaluation of the product was done by using 30 semi trained panelists. According to the sensory evaluation results, the L1 product had highest median scores for appearance, taste, texture and overall. The moisture and ash levels were also within the accepted levels in new product. Thus, it is concluded that the new meatball is fulfill the chemical and sensory properties to entered into the Sri Lankan food market as a new product.

Keywords: Button Mushroom, Processes Food, Sri Lanka

INFORMATION TECHNOLOGY-BASED NEW APPROACH TO IMPROVE THE PROCESS OF FERTILIZER STOCK MANAGEMENT IN AGRARIAN SERVICES CENTERS-IN RATHNAPURA DISTRICT

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ABSTRACT

Food security is one of the Sri Lankan government's strategic programs. In support of this program, under the Department of Agrarian Development, Agrarian Services Centers play a critical role in fertilizer distribution to farmers. The proper fertilizer distribution strategy is critical because it will result in meeting the needs of both farmers and officers. Currently, all fertilizer issuing and management is done manually at agrarian service centers. Inventory management is a fundamental necessity in any organization. Stock mismanagement can have major consequences, such as stock expiration, storage issues, and lost revenue. Every process began to be incorporated into an electronic environment after the computer age. Information technology-based systems offer the benefits of having the most effective control with the least amount of work and employees. After learning about the various difficulties faced by agrarian officers during the manual fertilizer stock management process through a survey, an information technology-based new approach was designed and introduced to the Agrarian Services Centers in the Rathnapura district as a solution to the issues in the manual process. The approach has benefits such as tracking product availability for uninterrupted sales, giving a scientific basis for inventory planning, assisting management decision-making to assure proper stock allocation, and eliminating waste while saving time. It also maintains a record of issued fertilizers and stock, as well as suppliers', farmers', and officers' information. The research method's stages were: systematic observation of the current process, data collection, system design, final system introduction, and obtaining feedback about the process improvement. The study's findings include introducing an information technology-based novel approach to improve the process of fertilizer stock management in Rathnapura District's Agrarian Services Centers.

Keywords: Fertilizer Stock Management, Process Improvement, Information Technology

ANALYSIS ON DESICCATED COCONUT EXPORT MARKETS OF SRI LANKA, APPLICATION OF THE BOSTON CONSULTING GROUP MATRIX

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ABSTRACT

Sri Lanka is a country which is famous for its coconut and coconut based products in the international market. Sri Lanka has been ranked as the fourth largest country that exports coconut. Under this coconut and coconut based products category, desiccated coconut is one of the highest export commodities and it is well known in the international market for its fine texture and light color. Sri Lanka is the 3rd largest desiccated exporter in the world. Therefore this study is based on the Desiccated coconut export markets of Sri Lanka and analysis is done using Boston Consulting Group (BCG) Matrix which is widely used as a business strategy model & portfolio management tool. Purpose of this research is to classify the export markets into four quadrants in terms of cash cow, star, question mark and dog. Also this study suggests strategies which can support the strategic decision making process regarding exporting Desiccated Coconut. For conducting this research 20 export market destinations have been used. Results show that Iraq, Jordan, Portugal and Spain are in the cash cow quadrant while Chile is in the star quadrant. Canada, Brazil and Turkey are in the question mark category. Finally the study shows that the Iran, Pakistan, Saudi Arabia, France, Germany, Australia, UK, Belgium, Netherland, Japan and Egypt are in the dog quadrant.

Keywords: Desiccated Coconut, BCG Matrix, Sri Lanka, Market share, Market growth.

DEVELOPMENT OF POTENTIAL USE FOR COMPOSITE FLOUR FOR DIABETIC PATIENTS FROM SRI LANKAN INDIGENOUS FRUIT: *HAL (Vateria copallifera)*

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ABSTRACT

Food is one of the most essential necessities that play a vital role in human life. Food consumption habits in Sri Lanka have rapidly changed over the last two decades. Unhealthy dietary habits have been linked to metabolic disorders and a higher risk of noncommunicable diseases (NCDs). Consumers more and more trust that foods have a direct impact on their health. Today, foods are designed not only for key intended functions; satisfy hunger, provide necessary nutrients and improve physical and mental health, but also to prevent nutrition-related diseases. This study was conducted with the aim of developing a composite flour product for diabetic patients from Hal seed flour incorporated with brown rice flour as a substitute for highly refined wheat flour. Three blending ratios of Hal seeds and brown rice flour were tested in this study. Sensory quality evaluation was done to select the best formulation and one-way ANOVA test were used to determine the acceptability. Conclusion based on sensory evaluation, 2:1 Hal seed flour with brown rice flour blending ratio revealed acceptable for composite flour production. The nutritional analysis of composite flour confirmed that it contains 6.02% moisture, 5.78% ash, 6.16% fat, 13.5% dietary fiber and 0% sugar. A market survey was conducted with diabetic patients in the Matugama administrative area to investigate the consumer preferences towards this newly developed composite flour. Data was gathered from 100 respondents using simple random sampling. The data of the study revealed that the majority of respondents were diagnosed with diabetics after 40 years. Most of them (69%) generally consume wheat flour, and the majority (31%) are unaware of the impact of different types of flour on blood sugar levels. Overall, this study indicated that the respondents (75%) were unconscious of the anti-diabetic properties and health benefits of Hal seed flour, and that the majority (59%) preferred to purchase this new product.

Key words: Food Product Development, Composite flour, Hal (*Vateria copallifera*), Brown rice flour (*Oryza sativa*), flour mix for diabetics.

STUDY ON DEVELOPING A BREAKFAST CEREAL FROM JACKFRUIT SEED (*Artocarpus heterophyllus*) FLOUR, BROWN RICE (*Oryza sativa*) FLOUR & ARROWROOT FLOUR (*Maranta arundinacea*)

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ABSTRACT

Breakfast cereals are breakfast foods prepared using different cereals or grains. Although they are very popular among people, but sometimes, their nutritional values are not good. This study was conducted with the objective of developing an alimentary nutritional breakfast cereal to be introduced to the market, by using underutilized jackfruit seed flour and arrowroot flour mixed with brown rice flour. In this study sensory analysis, proximate analysis and statistical analysis were also conducted. After several preliminary trials, four formulations were prepared for conducting sensory evaluation. The sensory evaluation was done to identify the best ratio of jackfruit seed flour, brown rice flour and arrowroot flour in order to develop a nutritious breakfast cereal and to determine the sensory properties (Color, aroma, taste, mouthfeel and overall acceptability) of it. Regarding that nine-point Likert scale with 15 trained panelists were used. Based on the sensory analysis, formulation 1 was selected as the best formulation and it was used for the further developments and tests. The proximate analysis was done to determined moisture content, ash content, crude fat and crude fiber contents. Data gathered from the survey was analyzed with descriptive statistics using SPSS-Version 25 to identify the consumer preference for this product. Further improvements to selected formula and analysis for physicochemical properties during storage are needed to be done before introducing this product to the market.

Keywords: Product development, breakfast cereal, jackfruit seed flour, brown rice flour, arrowroot flour

DEVELOPMENT OF A SPICE (PEPPER AND MUSTARD) INCORPORATED CONCENTRATED YOGHURT SPREAD

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ABSTRACT

Incorporation of spices to concentrated yoghurt is a novel product concept in Sri Lanka. The incorporation of pepper and mustard is a new trend in the traditional food spread market that increases consumer preference while also providing health benefits to consumers. Objectives of this study were to develop pepper and mustard incorporated concentrated yoghurt spread with higher sensory quality for the local market, and to evaluate the chemical and microbiological stability of the manufactured product for its long- term quality. Trials done with different levels of salt (w/w) to obtain suitable texture and organoleptic properties for the concentrated yoghurt spread showed that the best ratio of salt was 1% according to the mean values. Different treatments of concentrated yoghurt spread prepared by changing the level of pepper and mustard (1:1) were tested and the data were analyzed using Friedman non parametric test. Organoleptic attributes such as appearance, taste, aroma, color, mouth feel, texture, spread ability and overall acceptability were analyzed using trained and untrained sensory panels. Physiochemical parameters such as pH, titratable acidity, dry matter, moisture; and microbiological parameters such as coliform, yeast and mold count were measured periodically up to 20 days to evaluate the shelf life of the product. The sensory, physiochemical and microbiological analyses confirmed that the 0.75% (w/w) pepper and mustard incorporated concentrated yoghurt spread was the best product. It was also proved that the shelf life of this product 15 days at 4 °C. Respondents preferred to purchase this product at the same price as the other spreads and recommended 100g as the product size and glass/ plastic jar as the packaging material for this new product.

Keywords: Concentrated yoghurt spread, organoleptic properties, shelf life, spices, product development

DEVELOPMENT OF A SUNFLOWER (*Helianthus annuus*) OIL AND KITHUL (*Caryota urens*) TREACLE INCORPORATED SET YOGURT

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ABSTRACT

Recently, there is a growing interest among consumers to try out innovative products with natural, nutritious ingredients and additional health benefits. This trend led to the development of yogurt products using vegetable oils as milk fat replacers and with low added sugar. The main objectives of this study were to develop a sunflower oil and Kithul treacle incorporated set yogurt with higher organoleptic acceptability and determine its shelf life by evaluating the physicochemical and microbial properties. In this study, four samples with 50%, 60%, 70% and, 80% sunflower oil percentages were developed to determine the best sunflower oil incorporation. The sample with 50% (w/v) sunflower oil was chosen as the best percentage to incorporate with highly acceptable organoleptic properties. Then, five samples were developed with 0:1, 1:1, 2:1, 1:2, and 1:0 sugar: Kithul treacle ratios to determine the best ratio to incorporate into set yogurt. The sample with 0:1 (sugar: Kithul) ratio was chosen as the best with the highest mean values for organoleptic attributes. All the organoleptic attributes were significantly different ($P < 0.05$) among the samples. Those five samples were analyzed for physicochemical and microbial properties during refrigerated storage at 4°C for 20 days at five days intervals. Physicochemical properties were significantly different ($P < 0.05$) among the samples. Titratable acidity was increased and pH was decreased with the storage period. Shelf life of the samples were determined as 15 days with the microbial parameters. Sample with 0:1 (sugar: Kithul treacle) ratio was chosen as the best sample from all evaluated attributes as the main finding of this study. As per the results of consumer preference survey, respondents prefer to purchase this product and willing to pay a higher price for it.

Keywords: Kithul treacle, sensory properties, set yogurt, Sunflower oil

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