

A Case Study of Quality Function Deployment Approach to Improve Quality of Edible Oil

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Abstract— The purpose for this paper is to translate customer requirement with respect to edible oil quality attributes into particular edible oil developing practices that most contribute to satisfy these attributes. After identifying consumer requirements or needs regarding different attributes of edible oil quality, through a survey of 110 edible oil consumers, the authors determine the oil growing practices that optimally satisfy consumer needs through expert opinions. Finally, the use of expert knowledge to construct the House of Quality or the first matrix of quality function deployment allow the authors to define the relative contribution of the various edible oil farming practices to the satisfaction of consumer requirements.

Key words: Quality Function Deployment, House of Quality, New Product Design, Product Development, Customer Needs, Performance Measures

I. INTRODUCTION

Organizations would be more successful which are more successful in the competition of flustered and competitive environment, recently. In other term, based on new philosophy of marketing that means customer-orienting, customers put the center of attention and look at problems in customer expression. Today, expression of customer satisfaction is one of the current expressions in formal environments. But undoubtedly, establishing customer satisfaction and even encouraging them with services and production quality, at first, need getting familiar with their needs and desires and then transferring these desires to the situation which services and production are produced. This subject, according to increasing complexity in economic, cultural and social systems, doesn't happen spontaneously but needs systematic approaches and techniques which change these conceptions to organizational processes. Today, modern management techniques are central to the work toward obtaining competitive advantages with customer-orienting.

whole design and assembling activity from concept to make and it can equivalent increase the productivity as production issues are resolve early in the plan & design stage. It is great as it fuses the voice of the consumer in the design - thus it is likely that the last item will be better intended to fulfill the consumer's needs. Additionally, it gives an understanding into the entire plan and assembling activity (from idea to make) and it can drastically increase the productivity as production issues are resolve on time in the design stage.

II. LITERATURE REVIEW

Quality function deployment in many companies the famous case which happened in Savadi, Errach & Para Lopez - Translate consumer requirements regarding olive-oil quality attributes into specific olive-growing practices that most

contributes to satisfy these attributes (2017), Khaneghah, Shoeibi and Ameri - Effect of storage condition and PET packaging on quality edible oils in Iran (2012) , Leonia Ndesiamoo Henry- Effect of Light and Air on the Quality and Stability of Selected Vegetable Oils (2016), There are three major cause of quality function development is major finding –

The demand for quality attributes of olive oil includes not only chemical and sensory attributes but also others related to marketing (price, place of purchase, and bottle), quality certification and guarantee , social aspects and even environmental issues

Result show the quality of oil has been decreased after the storage at high temperature and long time storage. Stability of vegetable oil is dependent on the type of oil and its initial physical and chemical properties, time and temperature of storage and the type of packaging .

The oxidative stability of oils is affected by the storage conditions including exposure to light and air. The study showed the values of PV, AV and FFA varying proportionally with the exposure to light and air. There was also a significant difference between the oils stability to spoilage where palm oil showed the highest stability

III. RESEARCH OBJECTIVE

- 1) Understand and accurately define the basic customer requirements, and then determine the level of their importance, to ensure focus on the requirements that are most important from his point of view.
- 2) Attempting to improve the quality of the product by converting the basic customer requirements to manufacturing and technical characteristics of the product and determine their technical priorities including ensuring that they are focused on meeting the desired customer requirements and / or exceeding their expectations.
- 3) Identify the competitive gaps through market and technical competitive analysis, which helps to diagnose strengths and weakness of the quality of the product compared to the nearest competitors in order to improve the quality of the product provided.
- 4) Attempting to measure the perceived quality of the market and the percentage of the value of the customer to the dimensions of quality, and price characteristics, in order to direct the company's attention towards achieving superior value to the target customer
- 5) To formulate & edible oil blends, which would carry health benefit of micronutrient and contain desired flavor quality.
- 6) To evaluate frying performance, to ensure that appropriate amount of micronutrients are present in fried/cooked products.
- 7) To effective utilization of available resources.

8) To make better environment in industry.

IV. QUALITY FUNCTION DEPLOYMENT STEP

A. Stage 1, Product Planning:

Building the House of Quality. Driven by the advertising division, Phase 1, or item arranging, is too called The House of Quality. Numerous associations just traverse this period of a QFD procedure. Stage 1 records consumer prerequisites, guarantee information, competitive opportunities, item measurement, contending item measures, and the specialized capacity of the organization to meet every consumer requirement. Getting information from the consumer in Phase 1 is basic to the achievement of the whole QFD process.

B. Stage 2, Product Design:

This stage 2 is driven by the designing division. Item configuration requires innovation and creative group thoughts. Item concept is made during this stage and part determinations are archived. Parts that are resolved to be most imperative to addressing consumer needs are then sent into process arranging, or Phase 3.

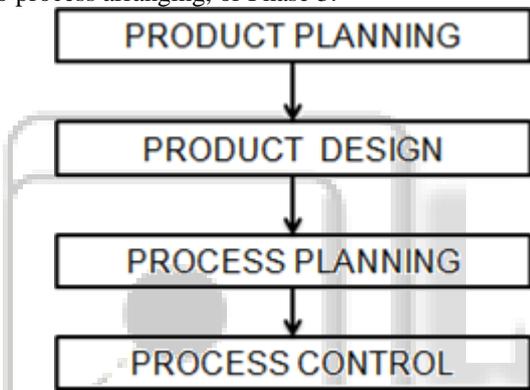


Fig.1: Quality function deployment step

C. Stage 3, Process Planning:

Process arranging comes straightaway and is driven by assembling designing. During process planning, fabricating forms are flow charted and process parameters (or target value) are archived.

D. Stage 4, Process Control:

Lastly, under way arranging, execution pointers are made to monitor the manufacturing process, upkeep time tables, and skills preparing for operators. Additionally, in this stage decision are made as to which process represents the most risk and controls are set up to anticipate disappointments. The quality confirmation department working together with manufacturing leads Phase.

V. HOUSE OF QUALITY

The House of Quality is the main framework in a four-stage QFD (Quality Function Deployment) process. It's known as the House of Quality in view of the connection framework that is rooftop formed and sits over the main body of the network. The relationship network evaluates how the defined item particulars optimize or sub-optimize each other.

On the right of the HOQ, as explain above, we put the score for each "Need" for the following Fields in a similar grouping:

- 1) degree of importance as indicated by the review and operational data (to give add up to 100),
- 2) The present arrangement is scored by 1 (at present no application is being used).
- 3) The competitors are selecting the lot size (values in the B/w of 1 and 5).
- 4) Planned score for our answer (values in the b/w of 1 and 5)
- 5) Rate of Improvement. for our case gives a similar figure with the arranged value
- 6) Sale point takes the value of 1 or 1.2 or 1.5 so on.
- 7) The absolute weight is the result of degree of importance, Rate of Improvement. and Sales Point
- 8) The related weight is computed from the absolute weight to give an aggregate of 100%.

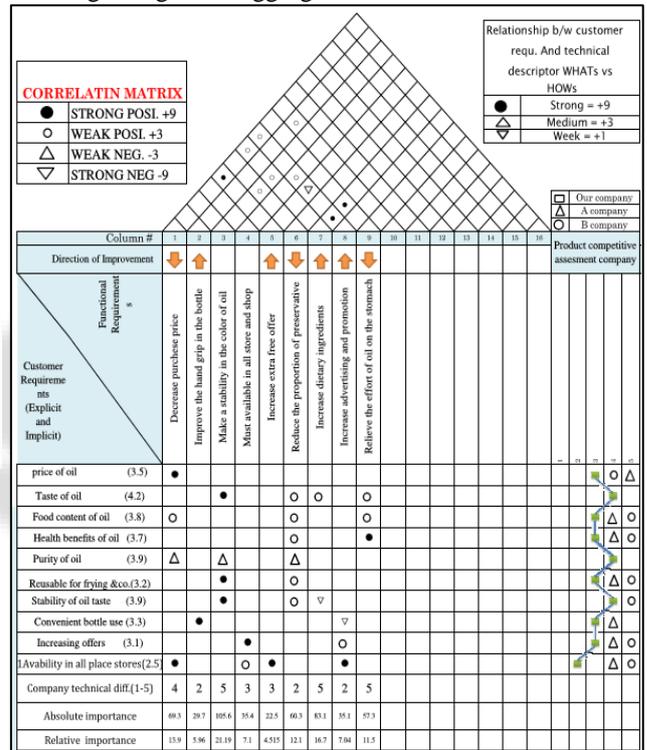


Fig. 2: House of quality

- 9) Below the relationship grid of (VOC) Voice of the Customer and (EC) Engineering Characteristics we have the "How much" where we calculate:
- 10) The absolute weight (add up to score) of every EC as the addition of the aggregate connection scoring of each "Need".
- 11) The score for each "Need" is the result of its relationship with the particular Engineering Characteristics and the DoI. "The aggregate score for every section means that the significance of that trademark in estimating consumer satisfaction " (Ghiya, Bahill and Chapman.
- 12) The Relative Weight which is computed from the absolute weight (above) to give an aggregate of 100% (standardization).
- 13) The total lot of the competitors for a similar EC (one line for every contender), which are figured also.

- 14) The Target lot (score) in the following line remain blank (not utilized it for our situation).
- 15) Below we figure the rank of every EC score to measure its significance. This will enable us to choose, subject to the available budget plan, on which "How's" we will send by need.

VI. RESULT & CONCLUSION

A. Result

The research work is completed based on the consumer Need (primary level) and the specialized prerequisites (optional level) to improve the execution of the current olive oil industry. These requirements are analyzed by deploying them, in the approach like proposed QFD and proposed FQFD which aims to fulfill. The requirement of the consumer. The use of proposed QFD is conveyed out to distinguish the standardized individual weight of specialized requirement.

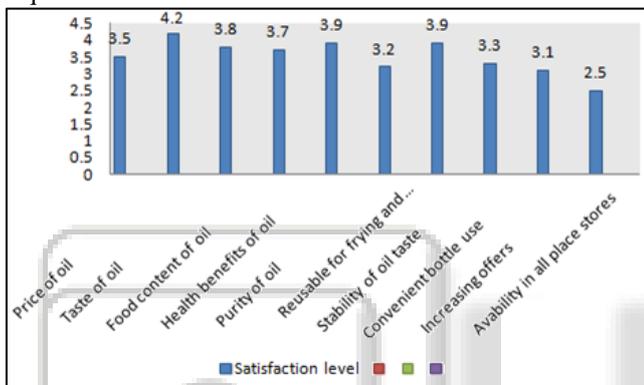


Fig. 3: Satiation level

B. Scope for Future Work

Future work can be completed in this QFD (Quality Function Arrangement) area specifically include implementation of AHP (Analytical Hierarchy Process) and Fuzzy AHP to yield better outcomes. The assurance of the significance weights of consumer requirement can be improved with the joined use of fuzzy basic leadership and AHP. The combination of neural systems and QFD, FMEA (Failure Mode Effect and Analysis) and QFD, Taguchi and QFD can be done in future research work to create an insightful frameworks way to deal with Quality Function Deployment and the judgment is left for the specialists.

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