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Product Testing Techniques

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Abstract

Now a days product testing is most important criteria because of emerging harmful product defects. The main aim of this paper is to know about product testing techniques available to use. These techniques are significant to know about product manufacturing and material defects. Product recall or seal can have done by using these testing techniques.

Introduction

The main aim this paper is to know about different types of product testing techniques. A product is anything that can be accessible to a market for attention, use, or consumption and that might satisfy a want or need. It includes physical objects, services, persons, places, organizations, and ideas. Pure' Services are distinguished from 'physical' products on the basis of intangibility, inseparability, variability and perish ability. Services are a form of product that consist of activities, benefits, or satisfactions offered for sale that are essentially intangible and do not result in the ownership of anything.

Product Testing

Product testing is the branch of engineering concerned with the experimental, developmental, and performance characteristics of a product or product part. The range of testing projects has no clearly defined boundaries, and can include anything from the application of simple techniques to the development of new methods for testing products or parts.

Product testing is quality assurance in the context of research and development. This measure is conducted to determine the acceptability, safety and efficacy of products. It is imperative, but unfortunately, the most tedious and expensive part of the development process.

Testing

Testing is the practice of making objective judgments regarding the extent to which the system (device) meets, exceeds or fails to meet stated objectives.

Objectives of Product Testing

- Discover as many errors or bugs as possible in a product.
- Demonstrate a given software products matching its requirement specification.
- Validate the quality of software testing using the minimum cost and efforts.
- General high quality test perform effective test sand issue correct and help problem report.

There are three techniques to conduct product testing:

- Concept testing
- Product testing
- Test marketing

1. Concept Testing

This is concerned with measuring customer reactions to the idea or concept of a product. In fact, it is a kind of research in which the product idea is screened before any money, time or labour are committed to making the prototype products. The idea of a product with as many details as possible is made known to the customers either verbally or through the use of suitable blue prints. The response of the customers is checked and only if it is found encouraging, then the development of product prototype is taken up.

E.g., when the rest of the world had largely gone in for synthetic detergent in the powder form, it was decided by the Hindustan Lever Limited to test a detergent bar as a concept, because in India most people do not use washing machines or even buckets and are accustomed to using a bar to rub on the fabric.

Concept testing can tell whether the product is likely to be a success or not. To achieve better results, however, the product concept should include the finished product itself with all details, *viz*. packaging, price range, the brand name, *etc*. On the basis of these details, interviews are conducted to collect the opinion of the would-be purchasers. The major advantage of concept testing is that the management could form early judgements on the likelihood of the market success of the new ideas.

The other objectives of concept testing could be:

- To evaluate the relative merits of several new product proposals,
- To determine whether the product idea is to be abandoned or modified,
- To determine the size of the potential market, and
- To guide the management to adopt suitable marketing policies in advance.

Concept Testing has the Following Limitations or Drawbacks

- It entails some risk of disclosing the company plans to competitors. There is time-lag in obtaining and assessing the results.
- Respondents may overstate their interest and encourage unsound development.
- The validity of any measure of potential market size obtained through early stage concept testing may often be dubious.
- Findings may also be misleading if the test is not carried out properly.

2. Product Testing

Once the concept test of the product is successful, the next step is to put the real product into a few selected markets. This test will prove whether the product performs as expected or whether it lives up to the promise of the concept. Such a test enables the management to pick out the likes and dislikes of the consumers towards the product. It also gives an opportunity to the buyers to compare the product with the competitive products.

The objectives of product testing are:

- To assess proper product performance,
- To minimize the risks attached to full-scale launching of a new product,
- To identify the most productive market segments, and
- To collect necessary data about the responsiveness of the customers.

However, this is not a foolproof system for predicting the future. It cannot help to forecast the market size, sales volume, brand share, repeat buying, *etc*. Correct pricing can also be assessed.

3. Test Marketing

Even the most favorable results from the two tests mentioned above are not a conclusive evidence for the success of a new product. For instance, even where the product is seen to possess a high quality, market failure is still a possibility if other important factors in the marketing mix show weakness. It is, therefore, logical to examine how the company's total marketing mix may be tested by conducting test marketing. Under test marketing, the product is introduced in selected areas often at different prices in different areas. These tests would provide the management, an idea of the amount and elasticity of the demand for the product, the competition it is likely to face, and the expected sales volume and profits it might yield at different prices. Experience shows that the chances of a new product being successful are 'significantly greater' if it is first put into a controlled test market where it is exposed to realistic competitive conditions.

The objectives of test marketing are:

- To evaluate a complete marketing plan including advertising, distribution, sales, pricing, *etc*.
- To determine the promotional media mix, channels, *etc*., and
- To forecast the likely sales volume.

Though test marketing has definite advantages, there are some limitations as well, as follows.

- Competitors' response and their defensive action may not allow test marketing to provide a conclusive result.

- Test marketing is a costly affair.
- It is a time-consuming method. Many firms avoid test marketing since they wish to be "the first in the market".

Methods Used to Conduct Testing

There are five basic verification methods.

1. Inspection

Inspection is the verification by physical and visual examinations of the item, reviewing descriptive documentation, and comparing the appropriate characteristics with all the referenced standards to determine compliance with the requirements.

2. Certificate of Compliance

A Certificate of Compliance is a means of verifying compliance for items that are standard products. Signed certificates from vendors state that the purchased items meet procurement specifications, standards, and other requirements as defined in the purchase order. Records of tests performed to verify specifications are retained by the vendor as evidence that the requirements were met and are made available by the vendor for purchaser review.

3. Analysis

Analysis is the verification by evaluation or simulation using mathematical representations, charts, graphs, circuit diagrams, calculation, or data reduction. This includes analysis of algorithms independent of computer implementation, analytical conclusions drawn from test data, and extension of test-produced data to untested conditions.

4. Demonstration

Demonstration is the functional verification that a specification requirement is met by observing the qualitative results of an operation or exercise performed under specific condition. This includes content and accuracy of displays, comparison of system outputs with independently derived test cases, and system recovery from induced failure conditions.

5. Test (Formal)

Formal testing is the verification that a specification requirement has been met by measuring, recording, or evaluating qualitative and quantitative data obtained during controlled exercises under all appropriate conditions using real and/or simulated stimulus. This includes verification of system performance, system functionality, and correct data distribution.

Conclusion

By this I can conclude that product testing techniques are very useful to detect the defected products from the market. Most defective products can seal by using this techniques. Product testing is quality assurance in the context of research and development. This measure is conducted to determine the acceptability, safety and efficacy of products. It is imperative, but unfortunately, the most tedious and expensive part of the development process.