Unit 3 IP

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**Introduction**

Handling business is not an easy task. It requires a great level of effort and hard work to get the business in running. A person needs to have a passion and a great insight into the market in order to run a successful business. It is an era of tough competition and every organization is trying to excel in the market. The individuals handling large businesses and setups are always trying to grab the attention of maximum number of customers in the market. In order to do so, these companies keep coming up with innovative ideas for their products and marketing so that they can the maximum profits out of the market.

 A number of strategies are adopted in order to analyze the market situation. These methods are then further utilized in devising the strategies for marketing and advertising in order to grab the customer’s attention. The results of this analysis are also used to bring innovation and progress in the products and services they are offering (Lancaster, & Seneta, 2005). This function of analysis is usually performed by the R & D (Research and Development) department of the organization. The tools used mostly for this type of analysis are statistical tools and methods. Two of the prominent tools that are being used in this respect are Chi-square and Hypothesis testing.

 Both these tools of statistical analysis can aptly be applied to the field of sports goods especially outdoor sports goods. These told can be greatly beneficial in this industry as the customers, who are mostly sportspeople and celebrities, are always looking for a combination of innovation and compatibility in the sports goods. So these practices will be greatly beneficial in bringing improvements according to the latest trends and customers’ expectations.

**Discussion**

Sports are all about speed, precision, timely decision-making and acting upon that decision in an accurate manner so that it brings the expected outcomes. Sportspeople are adapted to these routines and are usually experts in juggling many balls in their hands at the same time. They have to focus on a number of factors while playing in the field and manage their time and resources accordingly. This is only possible when a sportsperson has a sharp mind and adequate resources. A sharp mind is obviously trained and can be achieved through focus and training but the resources can definitely be obtained by different sources.

 As a manufacturer of sports goods, it is extremely important to look into the latest trends in the market and the demands of the customers. A sports goods manufacturer needs to keep an eye on the interest of the customers and look into the comfort level of the customers. In order to analyze all these factors, different types of statistical tools are used, but the best tools that can be utilized in order to analyze all these factors is the Chi-square test and the hypothesis testing method.

**Chi-Square**

One of the most popular and widely used statistical tools in statistics is the chi-square test (X2). This test is conducted to measure the difference between the expected outcomes and the actual outcomes (Chi-squared Test 2011). It is, in fact, a comparison between the expectations of the researchers and the actually observed data. The researchers then further proceed to explain what the factors that caused this difference were. This difference may be caused due to the variables other factors that caused a change in the observations during the study.

The formula that we used for measuring chi-square is



Where the symbols represented are

C = Degrees of Freedom

O = Observed value(s)

E= Expected value(s)

Basically, the Chi-square test is divided into two types: the test of independence and the goodness-of-fit test. The test of independence focusses mostly on the relationship between different things; they can be two variables or two factors. However, the second type of Chi-square test, the goodness-of-fit looks into the chances and considers the fact that how many chances are there of a particular occurrence.

**Hypothesis Testing**

Hypothesis testing method refers to the process of inferring results from an already developed hypothesis or assumption regarding a population parameter. It is usually performed on a small sample that has been taken out of a large population (Tartakovsky, Nikiforov, & Basseville, 2014). This test allows the analyst to infer whether the assumption developed by him or her about the population is true or not. The analyst tests the developed assumption, with the intention of accepting or rejecting a null hypothesis. This proves that whether the primary hypothesis developed by the analyst is true or not. If false, the analyst move on to forming a new hypothesis, and again, the process is started from step one.

 The process of hypothesis testing usually consists of four steps:

1. The first step is to develop two hypotheses so that one of them can be proven wrong, and the other one can be perceived as right.
2. The second step of this testing process is the formulation of a data analysis plan, which tools will be used for the analysis purpose.
3. The third step consists of carrying out the plan and physically analyzing the data.
4. The fourth and finals step consists of analyzing the final results and accepting or rejecting the null hypothesis.

**Conclusion**

In a nutshell, it can be seen that statistical analysis proves to be of extreme benefit in the case of business development practices. This statistical analysis can be used to develop new products and bring innovations in the currently offered products and services by the company. The statistical analysis can prove to be f utmost advantage n the case of spots goods, especially outdoor sports goods, where the customers are much informed and demand up-to-date products. Two kinds of analytical tools or tests can be used to fulfill the analysis needs of the organizations; Chi-square tests and Hypothesis testing.

**References**

Chi-squared Test. (2011). Retrieved 22 October 2019, from https://www.youtube.com/watch?v=WXPBoFDqNVk

Lancaster, H. O., & Seneta, E. (2005). Chi‐square distribution. *Encyclopedia of biostatistics*, *2*.

Tartakovsky, A., Nikiforov, I., & Basseville, M. (2014). *Sequential analysis: Hypothesis testing and changepoint detection*. Chapman and Hall/CRC.