

Explain in no fewer than 500 and no more than 2,000 words why statistics are a vi...



The paper "Value of Statistics for the Researcher" is a great example of a term paper on statistics. Understanding the vitality of statistics to research is predicated on the appreciation of the purpose of research and the strategies, or methodologies, most commonly used to satisfy the stated. Several researchers have emphasized that, while all research is supposed to build on prior knowledge and, indeed, derive from prior research findings, they are expected to contribute new knowledge, or new understandings, to the field (Creswell, pp. 32-36; Sekaran, pp. 46-49; Cooper and Schindler, 2005, pp. 71). Within the context of the stated, statistics is a vital tool for both the arrival at and articulation/presentation, of new knowledge. Statistics are critical to a researcher's capacity to arrive at new knowledge which is valid and credible. In explaining this last, Cooper and Schindler (2005) point to the fact that statistics function as a tool for guiding the researcher during the primary data collection process, especially as pertains to the calculation of population samples. In further explication of the aforementioned, it is necessary to draw attention to the fact that research is concerned with the real-world phenomenon and is expected to explain some aspect of that phenomenon, as for example, consumer behavior towards imported Chinese toys. To fulfill the stated purpose, a researcher is required to survey a representative sample of toy buyers. This is a rather daunting prospect, to say the least, as the survey of all consumers is simply impossible and the survey of just a handful of, an uninformed sample, could invalidate the research results. The importance of statistics emanates from just that because their use guides the researcher towards an accurate identification of a representative population of toy consumers. Bordens and Abbott (2007, pp. 84-85) provide further insight into precisely how this is done. The <https://assignbuster.com/explain-in-no-fewer-than-500-and-no-more-than-2000-words-why-statistics-are-a-vital-component-of-any-study-project/>

researcher is first required to know, for example, the number of toy stores in a particular area and then deploy statistics to calculate a representative sample of the toy stores. Bordens and Abbott (2007, p. 87) propose the use of the following equation:  $n = \frac{\chi^2 NP (1-P)}{[d^2 (N-1) + \chi^2 P (1-P)]}$  Where  $n$  = required sample size  $\chi^2$  = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)  $N$  = the population size  $P$  = the population proportion (assumed to be 0.50, since this would provide the maximum sample size)  $d$  = the degree of accuracy expressed as a proportion (0.05)  $n = \frac{3.841 \times 1298 \times 0.5 (1-0.5)}{[0.05^2 (1298-1) + 3.841 \times 0.5 (1-0.5)]}$   $n \approx 297$  Since the sampling division ( $n/N = 297/1298 = 0.2288$ ) is greater than 5 percent (rule of thumb), the following formula is applied in order to reach the accurate sample size:  $n = \frac{n}{[1 + (n \div N)]}$  Where  $n$  = adjusted sample size  $n$  = sample size estimate  $N$  = population size  $n = \frac{297}{[1 + (297 \div 1298)]}$   $n = 242$  As pertains to the toy store example, the above formulas will be used to calculate two things. The first is the representative sample of toy stores and the second is the representative sample of toy buyers in the identified shops. Through the deployment of the said statistical tools, the researcher is able to identify a representative population sample, following from which the population in question will be surveyed regarding attitudes towards Chinese toys. Importantly, the conclusions reached will be valid because they are drawn from a representative sample population of the targeted consumer group. As may have been deduced from the above, statistics are vital to most research activity because they provide the researcher with a blueprint for the collection of primary data. This, however, is not the extent of the importance of statistics in research as, according to Creswell (2003, pp. 67-<https://assignbuster.com/explain-in-no-fewer-than-500-and-no-more-than-2000-words-why-statistics-are-a-vital-component-of-any-study-project/>

69), statistics also provide researchers with the tools necessary for the analysis of primary data. When making this point and in an effort to clarify the depth of the said importance, Creswell (2003, pp. 67-69) notes the presence of a wide array of statistical analysis tools, each of which fulfills a specific function and contributes specific insights into the phenomenon under investigation. For example, in instances where the researcher has conducted a survey study through close-ended questionnaires, standard deviations and frequency distribution emerge as an ideal method for the translation of the data in question into numerical form and their subsequent summarization in graphical form. The said tool, which is highly cost-effective and uncomplicated, effectively allows for the numerical/graphical summarization of large volumes of primary data. A second tool, scattergram and correlation coefficients, provides the researcher with a simple method for the identification of the relationship between variables and, added to that, directs the researcher towards conclusion pertaining to the implications of the said relationships. In other words, scattergram and correlation coefficients, allow an in-depth analysis of the research phenomenon through a statistical analysis of the primary research data. A third and final tool, difference tests, facilitate the process of comparing samples, or study groups and, as such, is ideally suited for comparative studies (Creswell, 2003, pp. 67-69). The implication here is, therefore, that statistics are invaluable to research data analysis. As was briefly touched upon in the above, there are different types of statistics and this, in itself, stands as a testament to the flexibility of this data analysis tool, insofar as different types mean that the researcher may select the type which best suits his/her research aims, objectives and the requirements of a particular research question. Within the <https://assignbuster.com/explain-in-no-fewer-than-500-and-no-more-than-2000-words-why-statistics-are-a-vital-component-of-any-study-project/>

context of the stated, and as Sekaran (2003, pp. 98-99) points out, there are two main types of statistics, these being inferential and the descriptive.

Descriptive statistics are employed for the purposes of describing the components of the data included in a study. Quite simply stated, they fulfill the purpose of providing concise overviews of the research sample and method. Inferential statistics, in comparison, extend beyond the limits of descriptive statistics in that they guide the researcher towards the arrival at conclusions which, while not specifically stated by the data results, can be inferred from them (Sekaran, 2003, p. 100). In other words, statistics is a flexible data analysis tool because they provide a strategy both for the derivation of findings which are explicit and for others which are implicit.

In conclusion, statistics are, quite evidently, a vital component of any research project and invaluable contribute to the worth of a project.

Statistics guide researchers in the data collection process and are invaluable to the data analysis stage. Indeed, apart from allowing researchers to arrive at implicit and explicit conclusions, the use of statistics contributes to the validity of a research project. It is, thus, that their importance and value cannot be underestimated.