Discussion Board 2

[Name of the Writer]

[Name of the Institution]

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It is highly necessary to prepare a specific research study plan to determine the percentage of defective glass shells for the considered lighting company. Researchers usually identify the variables that are involved in an experiment. Therefore, it is necessary to identify various dependent and independent variables in this case study. In the considered case study, we are provided with one dependent variable and three independent variables including temperature, humidity, and artisan expertise level. According to Brockner, Wiesenfeld, Siegel, Bobocel, & Liu (2015), the dependent variable is the one that is being tested or measured in an experiment. Whereas, an independent variable is the one that can be changed and controlled by the researcher. This research study will be beneficial for the considered lightning company as it can provide some valuable information to improve the manufacturing processes. Provided data contains three dependent variables along with one dependent variable. Moreover, we are not provided with complete production supervisor data. In the considered case study, the lightning company is only provided with approximately 60 percent data (242 days out of 365 days). For this particular research study, it is essential to make progress in specific parts. In the first part, there will be an analysis of existing data to understand the use of various percentages for the manufacturing of defective glass shells. In the second part, changes in the dependent variable will be analyzed by modifying the independent variables.

This study is important to determine the impact of percentage variation on defective glass shells in order to improve the manufacturing process. A critical examination of the considered case study is necessary to determine the design of a research study. The design of a research study helps to determine the type of research. For this particular research, a factorial design approach will be required to analyze the provided variables. A factorial design approach is potential for this research study as it allows to examine both dependent and independent variables. The number of levels of the factors is used to establish a factorial design. In the considered research study, independent variables need to be changed to analyze the changes in the dependent variable. Changes in the temperature, humidity, and artisan expertise level need to be measured to determine the percentage of defective glass shells. Studying several independent variables at the same time usually makes a difficult for the researcher to conduct such a large study. In the considered research study, there is a need to study each independent variable in accordance with the production supervision for 242 days. To make it a simple and effective study, a factorial design needs to be used to examine the interaction of given variables. A factorial design allows a researcher to examine each factor on multiple levels. Consequently, a factorial design approach will make this research study more efficient by examining the conjoined influence of multiple factors on the subject of interest.

Ethical consideration is highly necessary to conduct a research study. One must need to understand the importance of accuracy and precision during a research study. In a research study like this, one should provide the accuracy of an experiment (Buragohain & Mahanta, 2008). It is necessary for a researcher to represent the resemblance of a conducted research study to its true value. Success or failure of an experiment is possible due to the pressure of human error, poor data processing, or bad equipment. However, one should not temper with the actual results of an experiment as it will be unethical. According to the Bible, “You shall do no wrong in judgment, in measures of length or weight or quantity. You shall have just balances, just weights, a just ephah, and a just hin: I am the Lord your God, who brought you out of the land of Egypt” (Leviticus 19:35-36). It is utmost crucial for the researcher to consider different ethical standards to ensure the reliability and suitability of the research outcomes. It is also critical for the researcher to remain rational during the research process and illustrate the actual results of the study. Proper documentation of all the relevant aspects is also one necessary research condition to ensure the success of the overall research design. Adoption of appropriate ethical code of research process makes it easy for the observers to analyze the actual situation without any biasedness or rationality. Undoubtedly, the element of human error during the research experiment can never be ignored but the researcher needs to be alert about the problematic aspects such as improper involvement of the researcher in the research procedure.

**References**

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