Unit II Scholarly Activity

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Sun Coast Remediation Course Project

**Introduction**

Senior leadership at Sun Coast has identified several areas for concern that they believe could be solved using business research methods. The previous director was tasked with researching to help provide information to make decisions about these issues. Although data were collected, the project was never completed. Senior leadership is interested in seeing the project through to fruition. The following is the completion of that project and includes the statement of the problems, literature review, research objectives, research questions and hypotheses, research methodology, design, and methods, data analysis, findings, and recommendations.

**Statement of the Problems**

**Particulate Matter (PM)**

There is a concern that job-site particle pollution is adversely impacting employee health. Although respirators are required in certain environments, PM varies in size depending on the project and job site. PM that is between 10 and 2.5 microns can float in the air for minutes to hours (e.g., asbestos, mold spores, pollen, cement dust, fly ash), while PM that is less than 2.5 microns can float in the air for hours to weeks (e.g. bacteria, viruses, oil smoke, smog, soot). Due to the smaller size of a PM that is less than 2.5 microns, it is potentially more harmful than PM that is between 10 and 2.5 since the conditions are more suitable for inhalation. A PM that is less than 2.5 is also able to be inhaled into the deeper regions of the lungs, potentially causing more deleterious health effects. It would be helpful to understand if there is a relationship between PM size and employee health. PM air quality data have been collected from 103 job sites, which is recorded in microns. Data are also available for average annual sick days per employee per job-site.

**Safety Training Effectiveness**

Health and safety training is conducted for each new contract that is awarded to Sun Coast. Data for training expenditures and lost-time hours were collected from 223 contracts. It would be valuable to know if training has been successful in reducing lost-time hours and, if so, how to predict lost-time hours from training expenditures.

**Sound-Level Exposure**

Sun Coast’s contracts generally involve work in noisy environments due to a variety of heavy equipment being used for both remediation and the clients’ ongoing operations on the job sites. Standard ear-plugs are adequate to protect employee hearing if the decibel levels are less than 120 decibels (dB). For environments with noise levels exceeding 120 dB, more advanced and expensive hearing protection is required, such as earmuffs. Historical data have been collected from 1,503 contracts for several variables that are believed to contribute to excessive dB levels. It would be important if these data could be used to predict the dB levels of work environments before placing employees on-site for future contracts. This would help the safety department plan for the procurement of appropriate ear protection for employees.

**New Employee Training**

All new Sun Coast employees participate in general health and safety training. The training program was revamped and implemented six months ago. Upon completion of the training programs, the employees are tested on their knowledge. Test data are available for two groups: Group A employees who participated in the prior training program and Group B employees who participated in the revised training program. It is necessary to know if the revised training program is more effective than the prior training program.

**Lead Exposure**

Employees working on job sites to remediate lead must be monitored. Lead levels in the blood are measured as micrograms of lead per deciliter of blood (μg/dL). A baseline blood test is taken pre-exposure and post-exposure after the remediation. Data are available for 49 employees who recently concluded a 2-year lead remediation project. It is necessary to determine if blood lead levels have increased.

**Return on Investment**

Sun Coast offers four lines of service to its customers, including air monitoring, soil remediation, water reclamation, and health and safety training. Sun Coast would like to know if each line of service offers the same return on investment. Return on investment data is available for air monitoring, soil remediation, water reclamation, and health and safety training projects. If the return on investment is not the same for all lines of service, it would be helpful to know where differences exist.

**Research Objectives**

Appropriate development of research objectives for the research project is important to establish the necessary frame of action effectively and efficiently. Research objectives are recognized as concise statements to define what the researcher wants to achieve through the comprehensive process of research (Ngulube, 2019). In simple words, research objectives are essential to illustrate the overall direction of the research. The objectives of research project clearly defined the main aim of the entire research procedure.

RO1: To determine the association between a particular matter (PM) size and overall employee health.

RO2: To examine the effectiveness of training in case of reducing lost-time hours, and, if this is true, how to anticipate lost-time hours from the approach of the training cost.

RO3: To analyze if the perspective of data collected could be considered to predict the decibel (dB) levels of conditions before enlisting employees on site.

RO4: To observe that if the new training program is more beneficial as compare to the previous training program.

RO5: To critically investigate if blood levels have increased.

RO6: To assess if any form of differences prevails on return-of-investment in case of all lines of service.

**Research Questions and Hypotheses**

The crafting of research questions is one initial step of the research project that is characterized in the form of answerable inquiry concerning the overall idea of research (Creswell, 2014). This research approach is considered in case of a research project for the Sun Coast Remediation Organization to find out better solutions to the organizational problems. Moreover, the development of null and alternative hypotheses is a critical practical measure to determine the overall significance between two variables (Banerjee, Chitnis, Jadhav, Bhawalkar, & Chaudhury, 2009). It is crucial to explain the authenticity of the research objectives.

RQ1: What are the association between a particular matter (PM) size and overall employee health?

HO1: There is no statistically significant association exist between particular matter (PM) size and overall employee health.

HA1: There is a statistically significant association exists between a particular matter (PM) size and overall employee health.

RQ2: How training is effective in case of reducing lost-time hours?

HO2: There is no statistically significant prove that training is effective in case of reducing lost-time hours.

HA2: There is statistically significant prove that training is effective in case of reducing lost-time hours.

RQ3: How the perspective of data collected could be considered to predict the decibel (dB) levels of conditions before enlisting employees on-site?

HO3: There is no statistically significant evidence that data collected could be considered to predict the decibel (dB) levels of conditions before enlisting employees on site.

HA3: There is statistically significant evidence that data collected could be considered to predict the decibel (dB) levels of conditions before enlisting employees on site.

RQ4: How the new training program is more beneficial as compared to the previous training program?

HO4: There is no statistically significant evidence that the new training program is more beneficial as compared to the previous training program.

HA4: There is statistically significant evidence that the new training program is more beneficial as compared to the previous training program.

RQ5: Is the approach of blood levels have increased?

HO5: There is no statistically significant evidence that blood levels have increased.

HA5: There is statistically significant evidence that blood levels have increased.

RQ6: Are there any differences prevails on return-of-investment in the case of all lines of service?

HO6: There is no statistically significant evidence that any differences prevail on return-of-investment in the case of all lines of service.

HA6: There is statistically significant evidence that any differences prevail on return-of-investment in case of all lines of service.

**References**

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