An Evaluation of Employees' Perceptions of Food Safety and Training Sessions Effect on the Behavior of Employees in a Meat Processing Facility in Merida, Mexico

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Introduction

Food safety is an integral component of food production and has increased in importance in lesser developed countries in recent years with the continuing number of outbreaks (Hanak et al., 2000). It is necessary for food production facilities to implement systems that help control the spread of disease causing bacteria such as salmonella. The use of food safety models such as the Hazard Analysis Critical Control Point (HACCP) programs has been less than desirable in small and medium sized food businesses (Ball, 2009). Employees' behavior towards these models' implementation influences Salmonella prevalence in products (Vela & Fernandez, 2003).

The model of Russell, et al. (2009) for evaluating workshops was used to develop the process of this research. Following Ajzen's (1991) theory of planned behavior and Ball, et al. (2009) climate instrument to collect employee's data.

Objectives

- Describe employees' behavior in a meat processing plant in Merida, Mexico.
- Describe changes of salmonella prevalence in a meat processing plant where employees received training sessions of food safety.
- Evaluate and analyze the outcomes of the training workshops in regards of behavioral change and salmonella prevalence in a meat processing plant in Merida, Mexico.

Theoretical Framework

Russell's model (2009) evaluated the prior conditions of an educational workshop which included: student characteristics, presenter characteristics and the culture and leadership of the participant students. Once these were established, a needs assessment was conducted to evaluate the improvement that could be done. Training workshops were conducted to educate the workforce on areas of potential improvement. The final part was to evaluate the outcomes of the workshop and the overall change of the final product that was produce.

Ajzen's theory (1991) reference of planned behavior states that a person's perceived control, attitude, and subjective norms affect ones intentions and overall behavior. This is very similar to the theory of reasoned action and was an expansion of that theory. It is one of the most predictive persuasion theories of behavior.

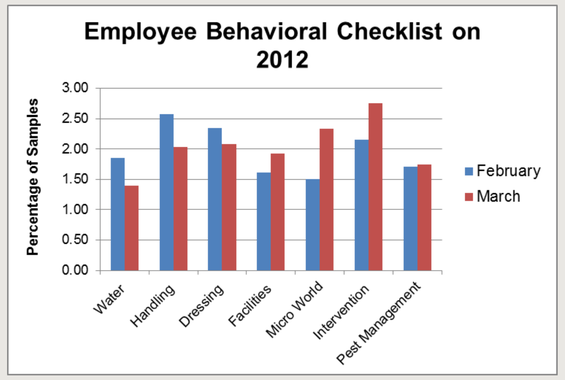
Methodology

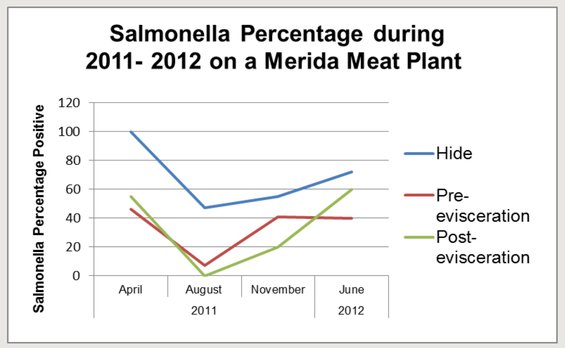
The purpose of this research is to measure the influences of training workshops in the prevalence of salmonella on the final product. The subjects in this study were the employees at a meat processing facility in Merida, Mexico. All employees are of legal age to be working in the facility therefore no consent of a minor was necessary to obtain.

A team of auditors from Texas Tech University traveled to Merida. The researchers observed the employees' behavior in their natural environment and in order to quantify the culture and attitudes of the employees, used the climate instrument developed by Ball, et al. (2009). This instrument was designed and reviewed by a panel of experts to quantify the behavior of employees in order to determine areas of improvement.

During the harvest shift members of the audit team collected swab carcasses at three different locations of the process to determine the levels of salmonella on carcasses. First being on the hide, second prior to evisceration, and third directly before entering the cooler. At the end of the harvesting, the audit team performed a training session with the employees where they shared simple practices that would help them prevent cross contamination and food safety knowledge to explained them the importance of food safety. Four repetitions of this process took placed between 2011 and 2012 to analyze differences in Salmonella prevalence according to seasonality. The results of the employee behavioral checklist was compared to the change in salmonella prevalence in order to determine the significance of the training.

Results





Results shows a decrease from 11-25% on three behavioral checklist categories: "water", "handling", and "dressing" from the first data collection; an increase from 19-27% on categories: "facilities" and " intervention"; a high increase of 56% on "micro world" category; and one category "pest management" that remain similar.

On the other hand Salmonella presence on hide process decreased 28% from the first sample collection, a 13% decrease on pre-evisceration process but on post-evisceration process an increased of 9%.

Conclusions

- Because there was no increase in all categories of the behavioral checklist, there was not an improvement in the percentage of salmonella of the final product, consequently it is recommended more training workshops on Merida Meat Processing Facility to promote changes in the employees behaviors in order to improve food safety in meat products.
- The increase on three behavioral checklist categories as they are: "facilities", "micro world" and "intervention", don't help with an improvement on Salmonella percentage, so on futures workshops it is recommended improve in "water", "handling" and "dressing" categories on the employee behavioral checklist for better results on Salmonella percentage.
- Further study is recommended to determine the impacts of trainings on food safety in meat processing plants.

Acknowledgements

The SOWER Scholarship Program it´s primary funding comes from USDA/NIFA Non- Grant Capacity Building grant.

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