# Exploring the Factor Structure of Banana Exporters in Relation to their Compliance with OSH Standards

**Francis Evan L. Manayan [1]**

[1] Part-Time Faculty, Professional school, Davao del Sur, Philippines

Email: [1] francismanayan@gmail.com

**Abstract**

An organization must capacitate workers and supervisors and go beyond compliance with Occupational Safety and Health (OSH) standards. Researchers have continuously dug and tapped into the seemingly close relationship between organizational factors and OSH implementation. In this study, the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to identify the factors and their interplay which affect OSH standard implementation of Cavendish Banana Exporters and to test the viability of a hypothesized factor structure per relevant theory. In carrying out the Key Informant Interview (KII), 8 supervisors participated in the activity. The purposive non-random sampling scheme was conducted to obtain insights from individuals considered "information rich." Furthermore, 328 respondents participated in the survey using simple random sampling techniques. Per responses gathered from the respondents, the Exploratory Factor Analysis (EFA) was utilized to determine and analyze the relevant structural factors. The results revealed four confirmed factors with its themes: Safety Climate, Trust and Reciprocity; Safety knowledge and motivation; and Degree of Compliance. These identified factors support the context of the selected institution's compliance with OSH standards.

Keywords: OSH laws; safety climate; management concern; empathy; enforcement.

## 1. Introduction

The organization must comply with the Occupational Safety and Health (OSH) standard to protect and secure employees. However, some relational aspects among the management, supervisors, workers, and other stakeholders present significant challenges in implementing the said standard. There is an increasing concern about OSH compliance to safeguard workers (Johnstone, Mayhew, and Quinlan, 2000). There is also a need for more information on injuries involving field workers in the agricultural industry. Some supervisors and managers issued their reliability in terms of data collection.

Similar to other laws and regulations; however, enforcement of the OSH Law and Labor standard is only possible with government intervention that involves work-site inspection and penalties. Becker, G.S. and Stigler, G.J. (1974) confirm that the main objective of enforcement is to attain that desired degree of compliance. The critical reason preventing society from attaining full compliance is that enforcement is costly. On the other hand, the Department of Labor and Employment (DOLE) of the Philippines has been challenged by organizational and resource constraints, such as the low number of labor inspectors compared

to the ever-increasing number of establishments and limited technical capacity (Hirose & Vitasa, 2007).

While several studies explained that law enforcement and monitoring of Labor Laws and OSH Standards, such as Anderson, L. and Stafford, S. (2006), Harrington, W. (1988), and Moran. T.H. (2005) highlights the organizational climate and workers as compliance indicators; only a few scholarly works, if any, were undertaken on understanding compliance and addressing the concerns on opportunism and social problems using economic, behavioral, and factor analysis. This study is intended to come up with the underlying dimensions that influence institutions' compliance with OSH Standards. Specifically, this study asks the central question: *What are the main reasons for compliance with the OSH Standard?* The enforcement of OSH Law and the institutions' decision to undermine workplace safety is mainly influenced by environmental and attitudinal factors. However, in this study, the inquiry is extended to two important economic concepts' role in compliance with OSH Standards: Behavioral economics and Economics of Crime and Punishment (Becker, 1968).

**Compliance with Philippine Occupational Safety and Health Standard**

In actual practice, an institution could be inspected to measure its current state of compliance based on appropriate OSH standards at random intervals. In the Philippines, the Department Order No. 18-A, series of 2011 (or the Rules Implementing Articles 106-108 of the Labor Code of the Philippines), for example, contains OSH standard which serves as a guiding principle in promotion and observance of the rights of workers to just and humane conditions of work. The specific OSH standards compliance indicators are found in Part II-B.1 of the Labor Standards Laws Compliance Assessment Checklist. The requirements cover Registration of establishment, Materials handling, Emergency preparedness, Working environment management, Pollution Control, Waste Management, Provision of Personal Protective Equipment (PPE), Provision of sanitary facilities, Appointment of Safety personnel, Administrative reports, and Mandatory training and orientation. The argument in this study is based on two institutional factors: (1) Enforcement by Regulating Agencies and (2) Compliance by establishments. These two factors are analyzed under the lens of behavioral or institutional economics.

**Behavioral Economics**

From the perspective of Behavioral Economics, it says that: "People are not always rational." Given this economic concept, it allows the manager to maximize profits while the consumers maximize utility. Despite the associated constraints being faced, the costs and benefits are compared to come up with the best possible course of action (Mankiw, 2004). It is not only the size or type of the organization that determines the decision of the employer to comply with Labor Laws and OHS standards. The principles of Behavioral Economics support that although the stimuli of engaging in a crime may vary among persons, there must be some general principles in understanding the factors determining the decision to engage in compliance or non-compliance with OSH Law.

*Managing Uncertainty*. Anchoring the economical concept on areas of human belief and experience, this study opens an opportunity to extract an extended explanation of the dynamism brought by the convergence of behavioral and psychological aspects when a particular transaction between two parties comes into play. When two parties transact

(internally or externally), there is an element of politics in it. Being in a structured society or specific group is a considerable part of reality. Applying political activity is necessary to adapt to any situation brought about by the inevitable change. However, more than politics is needed to sustain the degree of compliance because no form of cooperation is enforceable where trust cannot flourish. In the long-run environment of OSH compliance, the stability of relationships among the employees is critical and that is translated to the value of trust.

*Trust and Reciprocity*. Compliance with OSH Standards is more of a relational concept. The degree of compliance, for example, may be dependent on short-term intrinsic and extrinsic motivational aspects, but a long-term commitment is based on trust and reciprocity. Hence, the concept of relational goods and trust challenges the idea of Barling, J. and Frone M. (2004) that OSH compliance is heavily influenced by Safety Knowledge and Motivation. An enterprise may gain total compliance mainly because of intrinsic or extrinsic motivation, which is exemplified during passing audit requirements.

On the other hand, the value of trust and reciprocity (Hollis, 1994) highlights the element of "us," which assures that both parties (employer and employee) do what is best for all. Its rationale is based on the concept of repaying trust even at the expense of one's interest because it is all about the relationship of reciprocity. Similarly, Bruni and Sugden (2000) conform to the importance of common interest, of which reciprocity is demonstrated because a particular action brings a positive effect between both parties. Simply put, the authors look at the same rationale based on individuals identifying with the common interest that upholds the "we" rationale. Hence, total OSH compliance is a social idea in which the desire is reciprocal; and reciprocity cannot be coerced.

*Trust and Relational Contract*. Using Menard, C., and Shirley, M.'s (2005) definition of New Institutional Economics, the modes of organization are presented, grounded on the concepts of transaction costs, contracts and property rights. Specifically, transaction costs support these different modes and the tools for understanding the inherent characteristics of employer-employee arrangements. Since all forms of organization are costly, it is imperative to assess the advantages brought by transferring rights on goods and services and monitoring and organizing the involved transactions through the instruments of contracts.

For long-term relationships, Macneil (1983) proposes a continuum of relationships by integrating the concepts of solidarity and reciprocity in different contracts. In OSH Compliance, for example, employees and supervisors solve problems together, even though the latter are the only ones experiencing the burden of compliance. Since OSH Compliance is a long-term commitment, a long-term relationship has to be ignited, fueled by solidarity and reciprocity. Furthermore, the dynamic state of OSH compliance may start from an informal relationship, and it is expected that the challenges will be carried out on an institutional level. The relationship may be built on an institutional level, in that the challenges and opportunities become a common challenge across the organization, and the network of trust grows over time.

One point drawn from this discussion is that transactions involved in OSH Compliance are interlinked with agents with different behaviors and belief systems. This tells us that opportunism can emerge at any time as long as one party has the propensity to behave opportunistically. The concept of "relational contracting" is deemed to fail if internal and

external transaction costs reach an uncontrollable extreme level. The acknowledged constraints in compliance open an opportunity to cater to the capability of an organization to manage them for the organization's survival. As such, the OSH enforcement framework shall be viewed from the alignment of trust in terms of reciprocity and solidarity, which is the missing link between the workers' knowledge and motivation and the degree of compliance.

*Degree of Compliance.* At the organizational level, the decision to comply is anchored on the selective enforcement of regulation. Different types of establishments in the Davao Region are subject to the same regulation. It is logical enough to underscore the idea that does not expect all establishments to be equally compliant, per compliance costs directly related to the size and type of an organization. Also, compliance is challenging because of varying organizational landscapes and institutional arrangements influenced by ideological differences between agencies and firms (Gilliland & Manning, 2002). Furthermore, it has been revealed that careful attention to the details of OSH standards is necessary for the enforcement and regulation to succeed. Despite the high social costs associated with safety failures, implementing OSH strategies shall remain a priority.

The study by Anderson and Stafford (2006) confirms that the decision to comply is anchored on the selective enforcement of regulation. In the context of the Davao Region, different types of establishments are subject to the OSH standard. It is logical enough to demonstrate that one should not expect all establishments to be equally compliant, which can be explained by the characteristics likely correlated with compliance costs. The gap related to the studies opens an opportunity to determine if punishment and announcement of inspections affect compliance behavior differently.

**The Institutional Void**

The institutional void results from the breakdown of markets and governance (Dixit, 2009). This creates a gap between lead firms and ordinary workers that can only be bridged by incurring high transaction costs. In this study, identifying the dimensions contributing to the social loss due to non-compliance with OSH Standards is an attempt to address institutional failures by developing governance mechanisms and providing access to information. This way, the transaction costs can be reduced, and an inclusive business model will be achieved. According to Weil, D. (1996), the failure of OSHA is ascribed to the small number of inspections being conducted per number of establishments and the unacceptable level of fines paid by non-compliant establishments. Further, OSHA has been branded as a "toothless tiger," which forces the firms to comply with costly standards mandated by the enforcing agency. This idea implies that OSHA's drive for implementation is anchored on the credible threat of inspection associated with high penalties per violation.

It is not only on leadership nor the organizational forces that OHS compliance shall be based. Moran, T.H. (2005) cited the challenges associated with establishing an internal control system to monitor labor standards, such as problems with identifying the specific requirements and obligations to be attended by countries per core labor standard; problems with identifying factors of compliance with each core labor standard; problems associated with the sources of information; how to formulate hypotheses from raw data; and how to construct problems. Since this study attempts to bridge the gap between the recognized

challenges of compliance to OSH Standards and the existing regulatory regimes designed to safeguard workers, the concept of Non-compliance and appropriate theories were considered.

**Non-compliance and the Theory of Crime and Punishment**

In discussing compliance or non-compliance with OSH Standard, one ideal dilemma arises: *What prevents governments and institutions from actualizing regulatory requirements to safeguard workers?* To elaborate more on this dilemma, enforcement programs take their point of departure on the Theory of Crime and Punishment.

Becker's Crime and Punishment (1968) suggests evaluating the dimensions of compliance (or non-compliance) with OSH Standards. In terms of non-compliance, Becker analyzed it as a rational behavior under a situation of uncertainty. His empirical studies showed that the probability of being caught for non-compliance is much more of a deterrent to criminality than the term of punishment. He presented that the economics of choice (to comply or not) assumes that a person engages in illegal activities if the predicted utility (i.e., welfare and benefits) to him is greater than the utility that could be achieved by using time and other resources to other (legal) activities. Quoting for emphasis: *"Some persons become criminals, therefore, not because their basic motivation differs from others, but because their benefits and costs differ."*

Apart from Becker's optimality conditions that captured the two elements, such as Probability of Inspection and Severity of Fine, it is believed that there is more to crime and punishment in terms of OSH compliance. Prevention and reduction of illegal behavior can also be addressed proactively, based on the relational concepts in an organization. Hence, this study applies the initial procedure of scale development for future assessment on OSH Compliance in organization. An input-output model supports it. The input represents the predetermined dimensions of OSH compliance, while the process resembles the Exploratory Factor Analysis (EFA), which involves extracting factors that influence or describe a concept. Hence, the new scale of OSH compliance is developed.

Figure 1 shows the conceptual paradigm of the study. Further, the Confirmatory Factor Analysis (CFA) was applied to represent the hypothesized relationship in a model and assess how well the hypothesized factors and associated indicator variables fit the data.

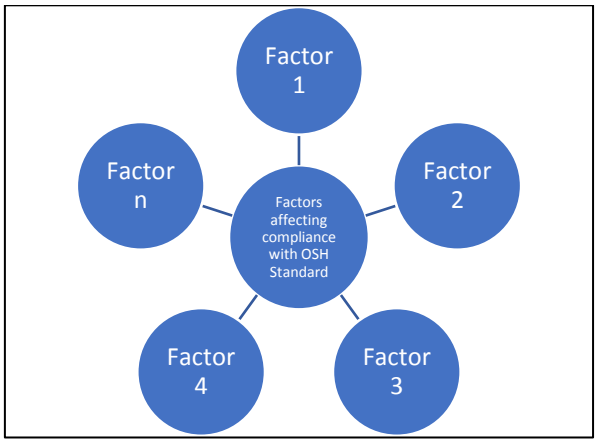


**Figure 1.** Conceptual Paradigm of the Study

## 2. Method

### Study Participants

The participants in the study are the supervisors of selected Cavendish banana exporters with Certifications Program related to OSH standards, namely, Farm 1 (Alanib-Lantapan, Bukidnon), Farm 2 (Valencia, Bukidnon), Farm 3 (Lanao del Sur) and Farm 4 in Calinan, Davao City.

In the first phase, the researcher collected qualitative data through an in-depth interview with eight respondents considered "information rich" in terms of OSH standard implementation. The main criterions used in choosing qualified respondents for the Key Informant Interview are the following: at least five years in the company and Field Supervisors. The Exploratory Factor Analysis (EFA) was applied to extract the relevant factors relative to OSH Standard compliance. Moreover, the responses guided the development of appropriate research questions for the second phase – the quantitative approach.

In the second phase, the formulated questionnaire was used in the survey process, involving 328 respondents. Then, the Confirmatory Factor Analysis (CFA) was used to identify the optimal factors and their interplay, which affect OSH standard compliance and implementation.

**Materials and Instrument**

During the KII, this study anchored its inquiry on the framework for conceptualizing a safety climate and safety behavior (Barling & Frone, 2004). It focused on two main questions*: What is the update on OSH compliance? What are the challenges and opportunities that influence OSH compliance?*

Based on the conduct of KII, 27 items identified were classified into four themes: Safety Climate, Trust and Reciprocity, Safety Knowledge and Motivation, and Degree of Compliance. These 27-item questions were checked and measured for reliability and validity before their administration for the survey process.

**Design and Procedure**

This study employed quantitative and qualitative components of research. The qualitative aspect used in-depth interviews (KII) with workers from the selected banana exporters. On the other hand, the quantitative aspect used both descriptive and explanatory design. The triangulation method was employed as the data were obtained from the workers and supervisors, including the related studies that may help substantiate the research findings.

In the Sampling Design and Method, two sampling schemes were considered in choosing the study participants. First, in the qualitative aspect that employed the Key Informant Interview (KII), the purposive non-random sampling scheme was applied to obtain insights from concerned field supervisors, per the set of inclusion criteria mentioned in the preceding section – Study Participants. The sample size of 8 was not so small as to make it difficult to achieve data saturation.

Second, in the quantitative aspect, the conduct of the survey employed simple random sampling wherein every individual from the total population has equal and independent chances of being chosen for the study. The sample size in this study is 378, which was determined based on the recommendation of Field (2000) that ten to fifteen participants per item are fair.

In terms of Data Collection, primary data were utilized in this study. In the qualitative aspect, significant statements related to OSH standard compliance were generated from the KII.

Consequently, the transcribed significant statements (in Visayan) were translated into English, then grouped and transformed into questionnaire items. Further, in the quantitative data gathering, the survey process results were tabulated and processed using the Statistical Package for the Social Sciences (SPSS), which guided the researcher in generating the emerging themes or underlying dimensions of compliance with OSH Standard. Item loadings were determined, and items were classified based on commonality and labeled with appropriate component names. On the other hand, the items that did not reach the threshold value were eliminated. Finally, the underlying factors were subjected to Confirmatory Factor Analysis. In observance of the ethical guidelines set by the University, the researcher carried out the procedures to make sure that the answers of the respondents were treated with the utmost confidentiality. This was emphasized in the letters of a request sent to the farms where the study was conducted.

## 3. Results and Findings

The 'Bartlett's test of sphericity' and 'Kaiser-Meyer-Olkin measure of sampling adequacy' provide a measure of the correlation's degree or strength. Table 1 shows a KMO value of 0.808, higher than the acceptable value of 0.5, and the Bartlett'sTest of Sphericity has a Chi-Square value of 2160.453 and a p-value of .000 lower than the .001 level of significance. Hence, the null hypothesis is rejected, justifying the significant factor analysis.

**Table 1.** Chi-squared Test

| KMO and Bartlett's Test | |
|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | .808 |
| Approximate Chi-Square | 2160.453 |
| *df* | 351 |
| Significance | <.001 |

**p <0.05*

In Table 2, component 1 has the highest eigenvalue of 5.285, which means factor 1 has the most variance compared to components 2, 3, 4, 5, 6, and 7. Also, component 7 has the lowest eigenvalue of 1.058, which implies that the factor with a minimum number of items contributes a lesser correlation to the factors affecting OSH standard compliance.

**Table 2.** Total variance explained

| Component | Initial Eigenvalues | | |
|---|---|---|---|
| | Total | % of Variance | Cumulative % |

| | | | |
|---|---|---|---|
| 1 | 5.285 | 19.573 | 19.573 |
| 2 | 2.692 | 9.969 | 29.542 |
| 3 | 1.850 | 6.851 | 36.393 |
| 4 | 1.486 | 5.504 | 41.897 |
| 5 | 1.260 | 4.667 | 46.564 |
| 6 | 1.143 | 4.234 | 50.798 |
| 7 | 1.058 | 3.920 | 54.718 |

**Rotated Component Matrix**

The data were subjected to principal component analysis to determine the factor structure. The four-factor solution, per rotated component matrix, is shown in Table 3. The first column contains the 7-item numbers; the second column contains seven items; the third with three items and the last is the actual 27-item statements subjected to exploratory factor analysis.

Table 3. Rotated Component Matrix and Factor Loadings

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| item4 | .791 | | | |
| item3 | .765 | | | |
| item5 | .655 | | | |
| item2 | .650 | | | |
| item26 | | .695 | | |
| item13 | | .577 | | |
| item22 | | .573 | | |
| item12 | | .506 | | |
| item18 | | | .742 | |
| item15 | | | .703 | |
| item19 | | | .607 | |
| item20 | | | | .722 |
| item21 | | | | .682 |
| item23 | | | | .522 |
| item27 | | | | .512 |

**Reliability Test**

This study used the Internal Consistency Type of Validity Test using the Cronbach alpha for reliability testing. With the reliability test of the 27 items, the overall summary result has a value of Cronbach's Alpha at .810 which revealed that the data used in the study is valid and statistically significant at .000. The results are shown in Table 4.

**Table 4.** Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .810 | .829 | 27 |

The value of the factors was preferred to be .5 and above as a chosen suppressed absolute value. Factor 1 (See Table 5) consist of 4 items, with the highest value of .791 on "Workers need to follow their supervisors to gain support in safety implementation." and the lowest value of .650 on *"Supervisors write down their findings to easily correct them and to be able to call the attention of the workers that violate the instructions and safety programs."* It denotes that the farm management did their job in strengthening OSH compliance by emphasizing the importance of a safe climate in the workplace. Thus, the result validated the interrelationship of communication and the attitude of the workers in supporting organizational climate. Further, the findings confer that perceptions of safety climate can influence workers' communication and motivation toward safety (Campbell et al., 1993).

**Table 5.** Factor 1 - Perception of Safety Climate (Work Environment Antecedents)

| Items | Value |
|---|---|
| Workers need to follow their supervisors to gain support in safety implementation. | **.791** |
| Safety implementation is achieved because of refresher courses given to workers (e.g. orientation; and pep talks are conducted early in the morning to avoid accidents in the workplace. | **.765** |
| Supervisors need to communicate in different ways because workers vary in terms of educational attainment. For example, safety policies and programs can be easily absorbed by those who have high educational attainment. | **.655** |
| Supervisors write down their findings to easily correct them and to be able to call the attention of the workers that violate the instructions and safety programs. | **.650** |

Factor 2 (see table 6) shows that four items belonged to this component with the highest value of .695 on *"Supervisors always emphasize to their workers their important role in providing the needs of their family to uphold safety in the workplace."* The lowest value of .506 goes to *"Giving specific instruction matters in safety implementation; so supervisors need to use his/her own experiences when communicating with the workers."*

This implies that the farm management has been considering the responsibility of the field workers in their family, especially since they are exposed to different types of job hazards in the workplace. Capitalizing on my own experiences revealed that safety knowledge and motivation are seen to impact the level of OSH compliance significantly. This study supports the concepts of Zohar, D. (1980), Brown, R.L. and Holmes, H. (1986), and Dedobbeleer, N. and Beland F. (1991), which considered management's motivation as an essential factor in achieving effective OSH Compliance. The study likewise noted that the workers' personal problems, issues, and attitudes were constraints in OSH compliance.

**Table 6.** Factor 2 - Perception of Trust and reciprocity

| Items | Value |
|---|---|

| | |
|---|---|
| Supervisors always emphasize to their workers their important role in providing for the needs of their families to uphold safety in the workplace. | **.695** |
| The habits and attitudes of the person are critical in safety implementation. For example, safety should be started by praying and communicating with God. | **.577** |
| The government regulators of safety policies/Laws need to conduct a surprise audit. | **.573** |
| Giving specific instruction matters in safety implementation; so supervisors need to use his/her own experiences when communicating with the workers. | **.506** |

Factor 3 (See table 7) has three items with the highest value of .742 on *"Supervisors sympathize to workers who use worn-out PPE because they are pitiful."* and has the lowest value of .607 on *"Safety implementation is also educating the workers. In this way, supervisors always emphasize to his/her workers the importance of protecting their life and that the banana plantation is exposed to toxic substances."* This implies that the supervisors' leadership functions impact workers' attitudes toward OSH compliance. The significant statements support the concept of Cox and Cox (1991), which covers one crucial factor: individual personal responsibility. Also, the attitudes can be translated into how workers achieve their tasks and their manner of interaction regarding safety programs.

**Table 7.** Factor 3 –Perception of Safety Knowledge and Motivation (Individual Antecedent)

| Items | Value |
|---|---|
| Supervisors sympathize with workers who use worn-out PPE because they are pitiful. | **.742** |
| Apart from personal safety, there is also a need to motivate other workers who have problems in the family. | **.703** |
| Safety implementation is also educating the workers. In this way, supervisors always emphasize to his/her workers the importance of protecting their life and that the banana plantation is exposed to toxic substances. | **.607** |

Factor 4 (see table 8) shows four items under this factor with the highest value of .722 on "*Workers tend to disregard safety policies and programs because of familiarity with their job. Hence, workers may not use PPE if the supervisor is not around."* It denotes that farm management is severe in enforcing safety policies in the workplace. The lowest value of the item with .512 goes to "*There are instances that a worker may purchase his/her PPE."* This factor revealed the active participation of supervisors in enforcing safety policies and programs directly to their subordinates. The continued violation of workers may have an inverse relationship with the item on the penalty system. This concept is based on the theory of Crime and Punishment (Becker, 1968), which states that the probability of inspection and higher fine combinations induce more compliance.

**Table 8.** Factor 4 –Perception of Degree of Compliance

| **Items** | **Value** |
|---|---|
| Workers tend to disregard safety policies and programs because of familiarity with their job. Hence, if the supervisor is not around, workers may not use PPE. | **.722** |

| | |
|---|---|
| Some workers have completed an educational degree but lack courtesy in terms of safety program implementation. | **.682** |
| There are times that supervisors humble themselves, but still, workers continue to violate instructions. | **.522** |
| There are instances when a worker may purchase his/her PPE. | **.512** |

**Confirmatory Factor Analysis (CFA)**

Shown in figure 2 is the result of the path model. Factor 1: Safety Climate, Factor 2: Safety Knowledge and Motivation, Factor 3: Workers' Attitude, and Factor 4: Workers' Involvement were all presented in a one-factor structure. To confirm the fitness of the model, absolute indices are also presented.

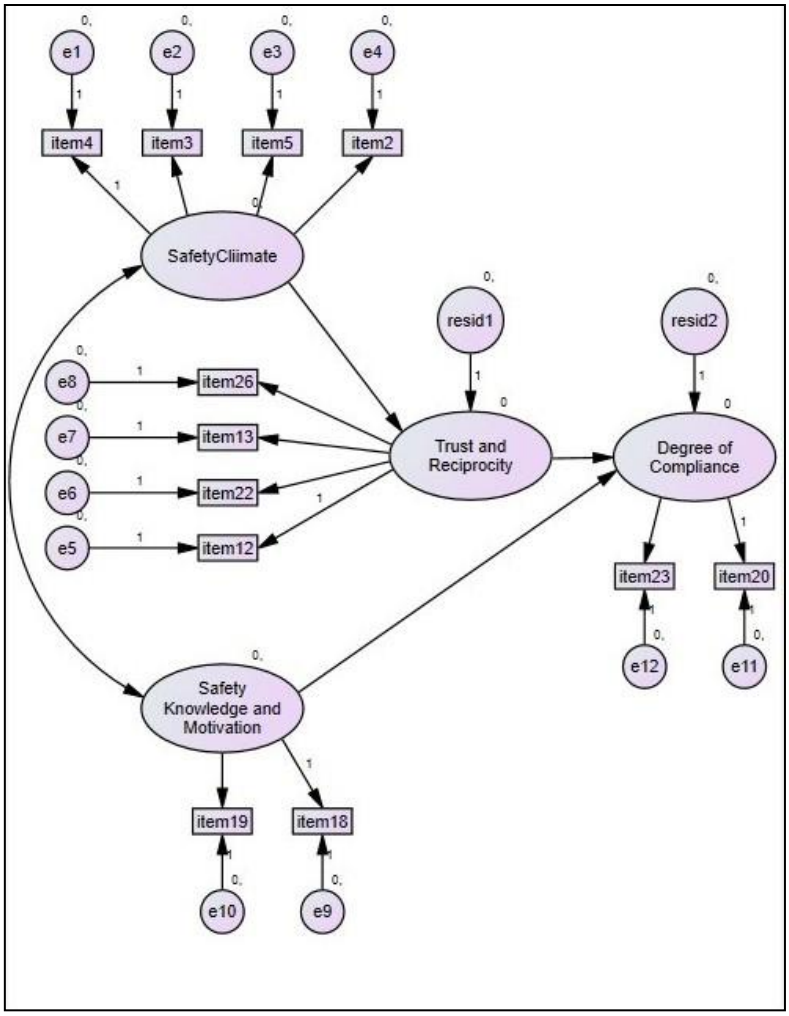


**Figure 2.** Result of the Path Model

**Absolute Fit Indices**

The result of the fit indices is presented in Table 9. The model had a chi-square value of 99.265 with a probability of less than .0001 ($p<.0001$). The result suggests that the data did not fit the model hypothesized in this study. However, the Likelihood Ratio Test is sensitive to sample size (Joreskog & Sorbom, 1993, as cited in Byrne, 2010). Furthermore, CMIN/DF or $\chi 2$/df is a statistic that lessens the effect of sample size on the chi-square. The $\chi 2$/df value

is 1.985, indicating that the model corresponded with the data. The succeeding model testing parameters and other absolute indices were applied to the findings.

The Root Mean Square Error of Approximation (RMSEA) is a statistic that considers the error of approximation in the population (Ho, 2014). The RMSEA for the hypothesized model had a value of .055, which translates to the adequateness of the model. The value for an acceptable RMSEA ranges from 0.05 to 0.08 (Ho, 2014). Hence, it has been justified that the model efficiently represents the data at hand.

**Incremental Fit Indices**

The CFA model generated a Normed Fit Index (NFI) value of 0.878, below the acceptable standard of 0.9. However, it was noted that NFI statistics tend to underestimate fit in small samples. In this study, it is suspected that the N=328 is considered a small sample. Hence, the Non-Normed Fit Index or the Tucker-Lewis Index was the following criterion considered. The NNFI of the model has a value of 0.896. A cut-off value of 0.80 is preferred for NNFI or TLI. Another alternative for the lack of sensitivity of NFI is the Comparative Fix Index (CFI). This criterion has the same function as NFI; however, it was argued that CFI is superior. The model's CFI is .933. This may suggest that the model fits the data. The next relative index is the Incremental Fit Index (IFI) which had a value of 0.936, which signifies that the model had a superior fit. The parsimony fit indexes, which inform the model's simplicity given the number of parameters, are represented by the Parsimony Normed Fit Index (PNFI). The cut-off value for this index is .500. The value is 0.563, which indicates that the model passed the criteria of parsimony in building a model.

**Table 9.** Index of the path model

| Indices | Index | Suggested standard | |
|---|---|---|---|
| Absolute Index | $\chi^2$ | The smaller the better | 99.265 |
| | $\chi^{2/df}$ | <3 (Good) | 1.985 |
| | RMSEA | <0.05 (Good) | .055 |
| Incremental indices | NFI | >0.9 | 0.878 |
| | TLI (NNFI) | >0.8 | 0.896 |
| | CFI | >0.9 | 0.933 |
| | IFI | >0.9 | 0.936 |
| Parsimony indices | PNFI | >0.5 | 0.563 |

Table 10 presents the regression weights for the model. All of the paths revealed a significant influence on variables ($p < 0.05$), except for the following five paths: Trust and reciprocity and Degree of compliance; Safety climate and Variable 4; Safety knowledge & motivation and Variable 12; Safety knowledge & motivation and Variable 18; and Degree of compliance and Variable 20. It has been revealed that Trust and Reciprocity is not a significant predictor of Workers' Degree of compliance.

**Table 10.** Regression weights for the paths explaining the model

| | | | Estimate | S.E. | C.R. | P |
|---|---|---|---|---|---|---|
| Trust and Reciprocity | <--- | Safety Climate | .813 | .111 | 7.349 | *** |

| | | | Estimate | S.E. | C.R. | P |
|---|---|---|---|---|---|---|
| Degree of compliance | <--- | Trust and Reciprocity | .079 | .122 | .647 | .517 |
| Degree of compliance | <--- | Safety knowledge & motivation | .536 | .140 | 3.828 | *** |
| VAR00004 | <--- | Safety Climate | 1.000 | | | |
| VAR00003 | <--- | Safety Climate | 1.179 | .123 | 9.590 | *** |
| VAR00005 | <--- | Safety Climate | 1.151 | .132 | 8.711 | *** |
| VAR00002 | <--- | Safety Climate | 1.127 | .123 | 9.192 | *** |
| VAR00012 | <--- | Trust and Reciprocity | 1.000 | | | |
| VAR00022 | <--- | Trust and Reciprocity | .694 | .119 | 5.852 | *** |
| VAR00013 | <--- | Trust and Reciprocity | .719 | .104 | 6.912 | *** |
| VAR00026 | <--- | Trust and Reciprocity | .598 | .085 | 7.073 | *** |
| VAR00018 | <--- | Safety knowledge & motivation | 1.000 | | | |
| VAR00019 | <--- | Safety knowledge & motivation | .819 | .187 | 4.382 | *** |
| VAR00020 | <--- | Safety knowledge & motivation | 1.000 | | | |
| VAR00023 | <--- | Safety knowledge & motivation | 1.078 | .234 | 4.601 | *** |

**p <0.05*

The results of the standardized regression weights are presented in table 11. As the Safety climate increases, the perceived level of workers' need to follow their supervisors to gain support in safety implementation increases over time (standardized coefficient = 4.448; $p< 0.05$). As the factor on Safety Knowledge and Motivation increases, the perceived level of the government regulators of safety policies/law need to conduct a surprise audit increases over time (standardized coefficient = 3.960; $p< 0.05$). Furthermore, as Safety knowledge and motivation increase, the perceived level of Supervisors sympathizing with workers who use worn-out PPE because they are pitiful increases over time (standardized coefficient = 3.527; $p< 0.05$). Finally, as workers' degree of compliance increases, the perceived level of *"There are times that supervisors humble themselves, but still, workers continue to violate instructions*" increases.

**Table 11** Standardized Regression Weights for the paths explaining the model

| | Estimate |
|---|---|
| VAR00004 | 4.448 |
| VAR00003 | 4.491 |

| | Estimate |
|---|---|
| VAR00005 | 4.323 |
| VAR00002 | 4.457 |
| VAR00012 | 4.277 |
| VAR00022 | 3.960 |
| VAR00013 | 4.524 |
| VAR00026 | 4.488 |
| VAR00018 | 3.527 |
| VAR00019 | 4.271 |
| VAR00020 | 3.043 |
| VAR00023 | 3.375 |

**Covariances of Latent Factors**

In this study, one hypothesized latent factor is assumed to cause the variation and covariation between the six observed variables. It is hypothesized that safety climate perceptions can influence workers' safety knowledge and motivation. The relationship between workers' safety knowledge and motivation influences how workers perform their work and interact with each other about safety issues.

The double-headed arrow among the four factors indicates assumed varying degrees of correlations. This supports the theory that safety knowledge & motivation is likely to have a relationship with the first factor: Safety Climate (Cox & Cox, 1991). As shown in Table 12, there is no significant correlation among variables.

**Table 12.** Covariances of Latent Factors

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| Safety knowledge & motivation | <--> | SafetyClimate | .022 | .029 | .772 | .440 | par_12 |

Therefore, attitudes, such as organizational culture, should not be expected to influence Safety Climate directly, but rather, attitudes (e.g., safety motivation) can only predict behavior (e.g., degree of compliance). The effects of attitudes on outcomes may be related to the effect on behavior (e.g., compliance). Finally, theories that support attitudinal concepts, behaviors, and outcomes (Fishbein & Azjen, 1975) have suggested that there shall be a distinction between safety outcomes (i.e., accidents and injuries) and workers' behavior and involvement (i.e., safety compliance).

**Safety Climate**

The significant function of Safety Climate in the CFA model supposes a "dynamic engagement approach" in OSH implementation in banana farms. It is dynamic because it expresses vitality in focusing on human relationships in this changing condition over time.

The centrality of supervisors' leadership and enforcement among the variables revealed that they should go beyond the task-related (or operational) functions. The interplay of 4 variables in the model advances the idea that the capacitating of the supervisors involves the extension of the leadership aspect to a social function. Hence, the quality of support and communication from the supervisors (as leaders) shall be activated to make enforcement possible. The model supports the idea that a leader's performance sets the group's OSH performance, and the lead performance shall be based on the strength of support and communication channels.

**Trust and reciprocity**

In the context of OSH implementation, the true strength of the supervisor's leadership may lie in a new concept of "shared leadership," equivalent to participatory management wherein trust and reciprocity are present. The traditional definition of shared leadership refers to the supervisor performing the task function while other members perform the social function (Abelos et al.). However, the model emphasizes that the strength of shared leadership is the ability to strike a balance between task-oriented and employee-based aspects. This is central in the leadership style of any supervisor in OSH implementation, wherein trust is highly paramount. A sense of balance can be achieved by considering the safety climate, management concerns, and enforcement.

In the context of farm workers, the acceptability and contextually tailored OSH programs matter in Haiti (Denis-Luque et al., 2019). Through the participation of farm workers and packing house workers, OSH training curricula were contextualized for better implementation. In this study, contextualization is revealed in the statement: "Giving specific instruction matters in safety implementation, so supervisors need to use his/her own experiences when communicating with the workers."

Furthermore, the role of government is also critical of trust and reciprocity. One of the compelling reasons is that the relationship between management and labor in some Asian countries is adversarial. It is revealed in defining and protecting rights, privileges, obligations, and workers' productivity (Jocano, 1999). A significant statement supporting this notion is: "The government regulators of safety policies/Laws need to conduct a surprise audit."

**Safety Knowledge and motivation**

Some supervisors may exhibit a tremendous amount of leadership to meet the needs of their subordinates. This is revealed in the significant statement: "Safety implementation is also educating the workers. In this way, supervisors always emphasize to his/her workers the importance of protecting their life and that the banana plantation is exposed to toxic substances." Also, the case of Chiquita's implementation of Corporate Responsibility revealed that it is possible to attain optimal results in implementation by embracing organizational values and leadership factors. Critical success factors are attainable if the sensitivity to the organizational climate, internal/external environment, awareness of core values, and transparent leadership are present (Were, 2003).

**Degree of compliance**

On a macro level, however, the level of enforcement of safety programs may be strongly influenced by the characteristics of the industry in which the company operates (Gordon, 1991). In a banana company, for example, the employees have adopted the Western

management styles, which are more participatory, less autocratic, and more democratized. However, the value orientation of Filipino workers influences them to accept bureaucracy and authority (Mendoza, 2001). Hence, the issue of authority and power is critical in enforcement, as reflected in the statements: "Workers tend to disregard safety policies and programs because of familiarity with their job. If the supervisor is not around, workers may not use PPE."

**The Best-fitted Model**

The dynamic interactions among variables (shown in Figure 2) revealed that the direct influence of Safety climate on trust and reciprocity concurs with the study of Cox and Cox (1991) in a European gas company. It explained that Safety climate, Workers' Attitudes, Safety Knowledge, and Workers' involvement are likely to have a complex relationship regarding compliance with OSH standards. This proposition is supported by a framework for conceptualizing a safe climate and behavior (Barling & Frone, 2004). The framework justifies that Safety climate significantly influences trust and reciprocity, per the statement: "*Giving specific instruction matters in safety implementation; so supervisors need to use his/her own experiences when communicating with the workers*."

The success of OSH implementation may be based primarily on the forces of subordinates and the situation (Tannenbaum and Schmidt, 2009). These three forces correspond to the interplay of the latent factors, namely, Degree of compliance (Forces in employee), Trust and reciprocity (Forces in the situation), and Safety knowledge and motivation (forces in manager). Therefore, these factors are vital to the success of OSH compliance.

In addition, a safety climate or culture supported by genuine support and communication can be translated to what the employees perceive and how this perception creates a pattern of beliefs, values, and expectations based on the business performance and priorities (Racelis, 2010). Apart from the safety climate, it must be highlighted that leadership behavior is a causal variable that affects any set of intervening variables and the envisioned end-result variables (i.e., effective OSH implementation). According to Newstrom, J. W. and Davis, K. (1993), intervening variables cover attitudes, motivation, and perception. Problems may occur at different levels: individual, interpersonal, group, intergroup, and total organizational levels. Hence, supervisors shall embrace the complex relationship of trust and reciprocity (participatory management), safety climate (support and communication), degree of compliance (enforcement), and safety knowledge (motivation and empathy) as a leader in OSH compliance or implementation.

The factor structure of Brown and Holmes (1986) supports the result of the study wherein the effectiveness of organizational climate was found to be correlated with the safety programs enforced by safety inspectors. Furthermore, the two dimensions of Workers' Attitudes in terms of sympathizing and educating the workers about safety are crucial in any safety activities (Dedobbeleer & Beland, 1991). The role of trust and reciprocity as a latent variable emphasized the concept of introducing the dimensions of safety climate (Zohar, 1980), which fundamentally involved an agreement at the employee level. The significant statements support this concept when "*supervisors emphasize the workers' role in providing for the needs of their family and by giving specific instructions by using one's own experiences during communication"*.

The role of Workers' safety knowledge and motivation is essential to aggregate individual perceptions of Workers' degree of compliance. Regarding the sustainability of implementation, for example, attitude contains two observed variables: Environmental advantage and Economic Advantage (Asuamah et al., 2013). The two signs that constitute Workers' safety knowledge and motivation support this concept when supervisors feel that financial constraints affect the provision of appropriate PPE to workers and if supervisors educate the environmental hazards associated with the farm.

## 4. Conclusion

The problems and opportunities in OSH standard implementation may occur at a particular level and need a specific type of intervention. Supervisors and their subordinates may perceive implied messages about the level of safety program implementation compared with other management priorities such as cost and productivity. Since shared perception can be translated to a safety climate, appropriate intervening actions can be formulated. These perceptions may contribute to a long-term commitment based on trust and reciprocity and go beyond the degree of OSH standard compliance. At a compliance level, all workers need more knowledge regarding OSH legal privileges. Also, complicated outsourcing arrangements must be clarified about applicable regulatory requirements among employees and employers.

## 5. Recommendation

To be effective in OSH standard compliance, efforts shall be focused on human relationships. Likewise, effective leadership shall be behavior-based, which focuses on the following recommendations:

1.) Supervisors shall consistently motivate workers. Applying positive reinforcement may boost compliance and participation among the workers. The provision of incentives, for example, maybe more effective when implemented on a group level wherein collaboration can be practiced.

2.) To effectively increase safety knowledge, there shall be an increased level of participation in OSH standard compliance. Based on the identified 27 significant statements, the supervisors and workers shall closely coordinate with each other to implement corrective actions and OSH-related preventive programs. Once their knowledge and understanding of OSH Policies and programs have improved, an increased level of commitment shall follow.

3.) Upholding a solid safety climate shall not be confined to the frequency of safety training or orientations. Instead, supervisors and workers shall be empowered to let everybody take ownership of one's tasks and take a personal interest in improving the organization's safety performance.

4.) Finally, for future researchers, since this study covered only four banana farm exporters, related or long-term improvement may also be explored in other industries or institutions. Another way to give more depth to the study is to approach the institutions by focusing on the contracted workers and service providers.

References

[1] Anderson, E. and Gatigon, H. (2005). Firms and the Creation of New Markets. Handbook of New Institutional Economics. Available at: https://flora.insead.edu/fichiersti_wp/inseadwp2003/2003-57.pdf

[2] Anderson, L. and Stafford, S. (2006). Does Crime Pay? A Classroom Demonstration of Monitoring and Enforcement, 72 (04). pp. 1016-1025. doi:10.1002/j.2325-8012.2006.tb00751.x

[3] Asuamah, S., Adu-Tutu, F., Darkwa, B. and Amponsah, L. (2013). Attitude towards sustainable agriculture: A survey of agricultural science students in Sunyani Polytechnic, Ghana, West Africa. *International Journal of Innovative Research in Management,* 2(2). Available at: https://www.researchgate.net/profile/Samuel-Yeboah-4/publication/308019895 (Accessed: 20 December 2022).

[4] Barling, J. and Frone, M. (2004). The Psychology of Workplace Safety. 1st edn. Washington, USA: American Psychological Association.

[5] Becker, G. (1968). Crime and Punishment: An Economic Approach. *The Journal of Political Economy*, 76(2), pp. 169-217. Available at: https://www.jstor.org/stable/1830482. (Accessed: 21 December 2022)

[6] Becker, G. S. and Stigler, G. J. (1974). Law Enforcement, Malfeasance, and the Compensation of Enforcers. *Journal of Legal Studies*, 3(1). doi:10.1086/467507?journalC ode=jls

[7] Brown, R. L., and Holmes, H. (1986). The use of a factor-analytic procedure for assessing the validity of an employee safety climate model. Accident Analysis and Prevention, 18(6), 455–470. doi: 10.1016/0001-4575(86)90019-9

[8] Bruni, L. and Sugden, R. (2000). Moral canals: trust and social capital in the work of Hume, Smith, and Genovesi. *Economics and Philosophy*, 16(01), pp. 21-45. doi: 10.1017/S0266267100000122

[9] Byrne, B. (2010). Structural Equations Modeling with AMOS. Basic Concepts, Applications, and Programming, 2nd edition. New York London: Routledge Taylor and Francis Group

[10] Cox, X. and Cox, T. (1991). The structure of employee attitudes to safety: A European example. An International Journal of Work, Health & Organizations, 5(2), pp. 93-106. doi: 10.1080/02678379108257007

[11] Dedobbeleer, N. and Beland, F. (1991). A safety climate measure for construction sites. *Journal for Safety Research,* 22(2), pp. 97-103. doi: 10.1016/0022-4375(91)90017-P

[12] Denis-Luque, M. , Luque, J. , Saint-Louis, C., Tovar, A. and Grzywacz, J. (2019). Research to practice (R2P) in Occupational Safety among South Florida Haitian Farmworkers. Available at: https://apha.confex.com/apha/2019/meetingapi.cgi/Paper/446875?filename=2019_Abstract446875.html&template=Word. (Accessed: 22 December 2022).

[13] Dixit, A. (2009). Governance Institutions and Economic Activity. Available at: https://www.princeton.edu/~dixitak/home/PresAd_F1.pdf

[14] Field, A. (2000). Discovering Statistics using SPSS for Windows. London – Thousand Oaks – New Delhi: Sage publications.

[15] Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: an introduction to theory and research*. New York, USA: J. Wiley and Sons.

[16] Gilliland, D. and Manning, K. (2002). When do Firms Conform to Regulatory Control? The Effect of Control Processes on Compliance and Opportunism. *Journal of Public Policy and Marketing*, 21(2). doi: 10.1509/jppm.21.2.319.17578

[17] Gordon, G.G. (1991). Industry Determinants of Organizational Culture. Academy of Management Review, 16(2). doi: 10.5465/amr.1991.4278959

[18] Harrington, W. (1988). Enforcement Leverage When Penalties are Restricted. *Journal of Political Economy*, 76(1), 169-72. doi: 10.2307/20111866

[19] Hirose, K. and Vitasa, B.C. (2007). Implementation of the Labour Standards Enforcement in the Philippines, International Labour Organization, Subregional Office for South-East Asia, and the Pacific Manila. Philippines: International Labour Organization

[20] Ho, R. (2014). *Handbook of univariate and multivariate data analysis with IBM SPSS*. New York: CRC Press.

[21] Hollis, M. (1994). The Philosophy of Social Science: An Introduction. Cambridge: Cambridge University Press.

[22] Jocano, F. Landa (1999). *Towards Developing a Filipino Corporate Culture: Uses of Filipino Traditional Structures and Values in Modern Management*. Metro Manila, Philippines: PUNLAD Research House, Inc.

[23] Johnstone, R., Mayhew, C., and Quinlan, M. (2001). Outsourcing risk? The regulation of OHS where contractors are employed. *Comparative Labor Law and Policy Journal*, 22 (3), 101-143. Available at: https://www.researchgate.net/publication/228167402_Outsourcing_Risk_The_Regulation_of_Occupational_Health_and_Safety_Where_Subcontractors_are_Employed

[24] Joreskog, K.G. (1993). Testing structural equation models. In K.A. Bollen& J.S. Long (Eds), 294-316, Newbury Park, CA: Sage.

[25] Macneil, I.R. (1983) Values in contract, internal and external. Chicago: Northwestern University School of Law

[26] Menard, C. and Shirley, M. (2005). The Handbook of New Institutional Economics. New York: Springer

[27] Mankiw, G.N. (2009). Smart Taxes: An Open Invitation to Join the Pigou Club. *Eastern Economic Journal*, 35(1), 14-23. Available at: https://link.springer.com/article/10.1057/eej.2008.43 (Accessed: 20 December 2022)

[28] Mendoza, M. L. (2001). The Crisis of Management Culture in the Philippines: Neither East Asian nor Western. Available at: https://tinyurl.com/2sjmnx25. (Accessed: 22 December 2022).

[29] Moran, T.H. (2005). Monitoring Compliance with International Labor Standards: How Can the Process Be Improved, and What are the implications for Inserting Labor Standards Into the WTO? *Journal of Business Ethics*, 59(1), 147-153. Available at: https://link.springer.com/article/10.1007/s10551-005-3408-x (Accessed: 20 December 2022)

[30] Newstrom, J.W. and Davis, K (1993). *Organizational Behavior: Human Behavior at Work*. 9ed. New York: McGraw-Hill Inc.

[31] Quinlan, M. and Mayhew, C. (2001). The Global Expansion of Precarious Employment, Work Disorganization, and consequences for Occupational Health: A Review of Research. *International Journal of Health Services*, 31 (2), pp. 335-414. doi: 10.2190/607H-TTV0-QCN6-YLT4

[32] Racelis, A. D. (2010). Relationship between Employee Perceptions of Corporate Ethics and Organizational Culture: An Exploratory Study. *Asia Pacific Management Review*, 15(2), pp. 251-260. Available at: https://tinyurl.com/yn5nc6pf. (Accessed: 22 December 2022).

[33] Weil, D. (1996). If OSHA is So Bad, Why is Compliance So Good? *RAND Journal of Economics*, 27(3), pp. 618-640. doi: 10.2307/255847

[34] Were, M. (2003). Implementing Corporate Responsibility – The Chiquita Case. *Journal of Business Ethics*, 44, pp. 247-260. doi: 10.1023/A:1023316303587

[35] Williamson, O.E. (1991). Strategizing, Economizing, and Economic Organization. *Strategic Management Journal*, 23: pp. 75–94. doi: 10.1002/smj.4250121007

[36] Zohar, D. (1980). Safety climate in industrial organizations: Theoretical and applied implications. Journal of Applied Psychology, 65(1), 96–102. doi: 10.1037/0021-9010.65.1.96.