Exploring Whistleblowing Intention and Retaliation Measurement Instrument Using Rasch Model

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Abstract

Objective – This study aims to explore instruments used to measure both the intent to become a whistleblower and the perception of retaliation, and to explore the demographics of the sample using the Rasch model.

Design/Methodology – The results suggest that women are more likely to become whistleblowers than are men, regardless of the consequences.

Results – The paper concludes that both the basis of the cases against the banks and the purpose of large fines are open to question.

Research limitations/implications – More importantly, the results demonstrate that use of Rasch modeling can empirically validate instruments for measuring both the tendency to become whistleblowers and the effect of retaliation on whistleblowers.

Novelty/Originality – This study rated the likelihood of their reporting various violations of accounting principles.

Keywords: whistleblowing, retaliation, instrument, Rasch model, accounting students

1. Introduction

Whistleblowing is widely accepted as an instrument to fight corruption (OECD, 2012), as illustrated by the case of Michael Woodford, the former CEO of the Olympus company, who reported fraud related to the misappropriation of acquisition funds (MacGregor & Stuebs, 2014). According to (KPMG, 2019) nearly seventy percent of frauds are reported by whistleblowers; those whistleblowers are almost always accountants (Mustafida, 2020). According to (ACFE, 2016), the average loss due to fraudulent financial statements is $975.00 (ACFE, 2016) average losses due to asset mismatch and corruption are $125,000 and $200,000, respectively.

Among countries in southeast Asia, Indonesia has the highest number of fraud cases (ACFE, 2016). Nevertheless, auditors and accountants in Indonesia are still reluctant to report fraud (Latan et al., 2018a), despite the fact that accountants are more aware of financial statements and are more likely to access them (Davidow, 2017). Therefore, accountants are one of the keys to detecting fraud in the organization (Latan et al., 2018a). Several global cases of fraud have made research into whistleblowing a priority for various disciplines, but the solution to the problem has not been clearly identified (Hassan et al., 2014) (Thaler & Helmig, 2016).

Whistleblowing is defined as the disclosure of wrongdoing or fraud committed by an individual or group within the institution by another member of the institution (Nisar et al., 2019). (Taylor, 2018) labels whistleblowing as “pro-social behavior” that supports the public interest. Becoming a whistleblower is not easy because whistleblowers inevitably face various consequences. As a result, the heroic actions of whistleblowers are never far removed from the ethical dilemmas facing the work environment (Larasati, 2018).
According to (Nayir & Herzig, 2012), disclosure of wrongdoing and fraud is a complex event for the institution that can be affected by individual demographics of the participants (age, gender and tenure), specifics of the situation (materiality or seriousness/severity of the error and the status of the perpetrator), organizational parameters (ethical climate, organization size and job stages), and personal factors (religiosity, moral, locus of control, and retaliation perception).

Whistleblowing can occur for several reasons. The decision to become a whistleblower is influenced by several variables, one of which is the possibility of retaliation. The instrument used to measure both whistleblowing itself and retaliation for whistleblowing must be able to actually measure these variables. Therefore, researchers are motivated to explore and investigate various whistleblowing and retaliation instruments. The objective of this research is to explore instruments used to measure both the intent to become a whistleblower and the perception of retaliation, and to explore the demographics of the sample using the Rasch model.

This study explores instruments for measuring an individual's tendency to become a whistleblower when faced with the possibility of retaliation, using the Rasch model. To the best of the researchers' knowledge, no one has investigated these instruments using the Rasch model. Hence, investigating the instrument of the whistleblowing and retaliation variable is important if further studies are to accurately measure these variables. In addition, understanding the instrument used to measure tendency to become a whistleblower is crucial in researching both whistleblowing and retaliation. Therefore, this research is expected to provide future researchers with important information for developing research instruments related to whistleblowing and retaliation.

2. Literature Review, Theoretical Framework and Hypothesis Formulation
2.1 Whistleblowing

Whistleblowing is defined as the disclosure of wrongdoing (Dungan et al., 2015). There are four stages of whistleblowing: (1) determining whether the behavior is wrong; (2) reporting; (3) the institution's reaction to the report of wrongdoing; and (4) the institution's reaction to the whistleblower (Near & Miceli, 1996). According to Alleyne et al. (2018), the intent to become a whistleblower is a subjective decision, affected by factors such as personality, the environment, the potential consequences (Near, 1996), and the extent of personal responsibility for reporting (Alleyne et al., 2018; Latan et al., 2018b).

Company employees are usually aware of fraud and have the opportunity to report it. Employees most likely to become whistleblowers tend to have good job performance, are highly educated, have high positions in the organization, and have more moral reasoning than others (Mesmer-Magnus & Viswesvaran, 2005). Whistleblowing is considered a pro-social behavior, whether done voluntarily or to fulfill an obligation or duty.

Whistleblowers in the public sector can help the organization avoid damage to its reputation and preserve public trust in the organization (Pwc, 2011). Employees who choose to remain silent tend to have a high tolerance for fraud that occurs in the organization (Johnson et al., 2015).

According to (Chiu, 2003), Appelbaum & Shapiro (2006), (Ahmad et al., 2014), (Nayir & Herzig, 2012) the decision to report fraud committed by members or organizations is a complex phenomenon based on several things, namely the organization (Iklmin, ethics, job level and size of the organization), organizational, situational (materiality or seriousness of a fraud and fraud perpetrator status), personal factors (religion, values, moral standards, locus of control and retaliation) and individual demographics (gender, age and years of service).
2.2 Retaliation

According to (Rehg et al., 2008), retaliation is one of the undesirable consequences of whistleblowing (reporting both internal and external fraud). According to Keenan (2002), retaliation typically results when the employee discloses serious fraudulent information within the organization. Because whistleblowing has initial consequences within the organization, reporting to external parties is rare (Rehg et al., 2008).

The severity of any potential retaliation greatly impacts the decision to become a whistleblower (G. Liyanarachchi & Newdick, 2009). A potential whistleblower not only evaluates the possibility of retaliation but also the strength and the form of any possible retaliation (G. A. Liyanarachchi & Adler, 2011). Strong forms of retaliation include threats, lawsuits, and termination of employment. Weaker forms of retaliation include the breakdown of affiliations (Fatoki, 2013). Some examples of retaliatory actions in an organization are dismissal, demotion, revocation of position, giving work without responsibility, assigning work beyond the whistleblower’s ability, giving the whistleblower too much work, transfer, decrease in salary, poor performance appraisals, rejection of promotion, and being transferred to a different location.

Dyck et al. others (2010) found that approximately 80% of respondents to their survey experienced retaliation in the form of job loss. Dey et al. (1980) found that nearly 80% of whistleblowers report having experienced retaliation, including more than 35% who report being fired after reporting wrongdoing.

3. Research Methods

This qualitative research used a survey to gather responses from participants. Questionnaires were distributed to participants using Google Forms, in accordance with the objectives of this study.

3.1 Data collection

The participants in this study were 154 students at public and private universities in the territory of Indonesia. The participants, all students who had taken courses in Intermediate Financial Accounting, Auditing, and courses related to business ethics and behavior, were selected through purposeful sampling. Researchers chose these criteria believing that students who had taken these courses understood the basics of accounting and professional ethics.

3.2 Instrument Measurement

The dependent variable in this study is retaliation for whistleblowing. Each participant was presented with three hypothetical fact patterns, each outlining the existence of fraud, and for each fact pattern two possible forms of retaliation for reporting the fraud. We use realistic hypotheticals that describe the situation that must be responded to and assessed (Morrison et al., 2004). The hypotheticals used in this study were adapted from (Fatoki, 2013).

To evaluate these vignettes, this research use a five-point Likert scale, with 1 indicating “strongly disagree” and 5 indicating “strongly agree.”

<table>
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<tr>
<th>Hypothetical Fact Pattern</th>
<th>Consequences of Whistleblowing</th>
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<td>Suppose you are the internal auditor of a property company (Lulu, Ltd.) involved in the construction of low-cost housing. The company has a subsidiary named Dina, Ltd., which you audit. You report directly to Lulu Ltd.’s Principal Internal Auditor and also to the Chief Internal Auditor. During your audit of Dina, Ltd., you discover a series of false invoices that were paid to one of the contractors. You report this to the Chief High: After a few days, you ask the Chief Internal Auditor what happened to your findings; he tells you to forget about it. You demand further action, but the Chief Internal Auditor informs you that if you disclose your findings, you will lose your job. Given the situation above, indicate the likelihood that you will report the violation to a higher level in your organization.</td>
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Internal Auditor, who told you he would report it to the head of the Internal Auditors Group.

Low:
The Chief Internal Auditor informs you that if he discloses the findings, then the subsidiary (Dina, Ltd.) will be closed. Two of your best friends work at Dina, Ltd. Given the situation above, indicate the likelihood that you will report the violation to a higher level in your organization.

Suppose you are an auditor at a Public Accounting Firm working to audit a multinational company. While auditing, you find evidence of a transfer of IDR 200,000,000 to the account of the Finance Manager of the multinational company for the purchase of equipment. You investigate and find that no equipment purchases were made by the company. You bring the matter to the Senior Auditor at your firm. However, it is the Senior Auditor who tells you that this multinational company is your firm’s best client and you should not tell anyone.

High:
The Senior Auditor states that if you report this incident, you will not be recommended for promotion at the end of the year and you will be reported to the Audit Manager. Given the situation above, indicate the likelihood that you will report the violation to a higher level in your organization.

Low:
The senior auditor informs you that if you report your findings, the finance manager of the multinational company (who is a relative of your father’s) will lose his job. Given the situation above, indicate the likelihood that you will report the violation to a higher level in your organization.

Assume that you are the internal auditor for the City of Central Jakarta. You report directly to the Internal Audit Manager, who reports to the Head of Internal Audit. During the audit, you discovered that a monthly social fund grant of IDR 50,000,000 million intended for the elderly was transferred to the personal account of the Head of Inventory. You report this to the Internal Audit Manager, who says he will report it to his supervisor, the Head of Internal Audit. After a few days you ask the Manager of Internal Auditors what happened to your findings, but he says you should forget about it.

High:
You tell the Internal Audit Manager that you will report your findings to the Mayor of Central Jakarta. The Internal Audit Manager responds that if you report the transfer to the Mayor of Central Jakarta, you will lose your annual bonus, company housing, and company car. Given the situation above, indicate the likelihood that you will report the violation to a higher level in your organization.

Low:
The Head of Internal Audit informs you that if you report your findings, two of your friends who have applied for a contract to supply goods to the city of Central Jakarta will not get another contract because the Head of Inventory may be transferred to another position. Given the situation above, indicate the likelihood that you will report the violation to a higher level in your organization.
4. Results and Discussion

The data collected from the respondents were tabulated in a Microsoft Excel spreadsheet and analyzed using Winstep Rasch software. The Rasch model applied in this study has been adapted to the research objectives of the study.

4.1 Instruments measurement in the Rasch Model

Social and psychological research generally uses the classical test theory (CTT) approach (Wibisono, 2019). The CTT approach assumes that pure (T) and error (E) scores form the formula for generating visible scores (X). Error (E) is a basic condition out of control (Sumintono & Widhiarso, 2013).

Rapid developments have occurred in the types of measuring instruments that use the CTT approach for research in the social and psychological fields, in line with growing criticism of the CTT approach. (Alagumalai et al., 2005) found that the level of difficulty of questions, tests and assumptions was influenced by the variety of respondents, visible scores, and pure scores. In addition, (Michell, 2002) observed that the variety of data on opinion and attitude statements followed ordinal and nominal scales, meaning the analysis tool must be appropriate if the measurement objectives are to be accurate. In CTT, item response theory starts from imperfection to improve CTT. The Rasch model shows the application of item response theory.

The results of processing questionnaire data are considered more accurate when the Rasch model is used because of its ability to predict missing data based on individual response patterns (Sumintono & Widhiarso, 2013). Moreover, the Rasch model can detect errors in the instrument used and generate an error measurement score. CTT does not have the ability to adapt the data to its scientific condition, which is a continuum for quantitative data, especially non-parametric data, whereas the Rasch model approached it (Sumintono & Widhiarso, 2013). Data is more accurate under the Rasch model, because ordinal data can be transformed into ratios based on principles of probability. Data analyzed in the CTT model is formed by the available model; the Rasch model adapts to the data. Thus in the Rasch model, the information will be more holistic and the measurement more holistic because the instrument is well-validated (Bond & Fox, 2015). There are five main aspects to analysis using the Rasch model: (1) the ability to calibrate and estimate items; (2) the item characteristic curve on the parameter model; (3) the function of item and instrument information; (4) the map of the interaction between items and respondents; and (5) item and respondent misfit.

4.2 Instruments Reability Test

Table 2 shows the results of the test of the reliability of the instrument used in this research. There are 154 participants and 6 statements from 3 vignettes, for a total of 924 active data points (154 x 6) and a Chi-Square value of 1193.5093 with 1243 degrees of freedom (d.f.) and a probability of 0.8396. Analysis of the reliability of this instrument requires two types of output: first to translate the results of the analysis of the participants (person); and second to explain the item (item). The respondent table describes the fit (or not) of each of the respondents analyzed in this study. The item table describes the fit (or not) of each measurement item.

This study initially had 154 respondents, but analysis revealed that 23 of the respondents did not complete the survey accurately, leaving 131 respondents.

The “person” portion of Table 2 shows that the average person measure value is 2.68, meaning that most of the respondents answered “agree.” The separation value is 1.95, which shows that the instrument can identify the respondent group (Sumintono & Widhiarso, 2013). From the calculation equation, the value of 2.9 is rounded to 3, meaning three groups. The separation value uses the following equation:
The "item" portion of Table 2 shows the item measure value of 3.45 which shows that the item has a relatively high score. The separation value is 2.12, which identifies the group of items (Sumintono & Widhiarso, 2013). From the calculation equation, the value is 3.16 and is rounded down into three groups. According to these results, item 2 is divided into three groups according to the level of difficulty in responding. Here’s the equation:

\[ H = [(4 \times 2.12) + 1] = 3 \]

\[ H = [(4 \times 1.95) + 1] = 2.9 \]

Respondents and items have interactions that are assessed using Chronbach’s alpha (KR-20) of 0.89. In Rasch modeling, the Chronbach alpha value measures reliability, namely, the interaction between respondents and items. A Chronbach’s alpha of 0.89 is categorized as “excellent” because according to Sumintono and Widhiarso (2013), a value exceeding 0.8 indicates that the interaction between the two is strong. To measure the consistency of respondents’ answers, use the reliability value of 0.89 is considered the interaction between respondents and items. A Chronbach’s alpha (KR20) of 0.89 is categorized as “excellent” because according to Sumintono and Widhiarso (2013), a value exceeding 0.8 indicates that the interaction between the two is strong. To measure the consistency of respondents’ answers, use the reliability value of 0.89 indicating that respondents were consistent in answering items (Sumintono & Widhiarso, 2013).

### 4.3 Item value test

Table 4 shows the difficulty of each item answered by the research participants, measured in logits where the most difficult item is given the highest logit score and the easiest item is given the lowest logit score (Sumintono & Widhiarso, 2013). According to Table 3, the item with the code R6 was the most difficult item to answer, with a logit item value of 0.57.
4.4 Item Value Test - Fit Order

The item fit order value test provides information on whether or not an item is fit (Sumintono & Widhiarso, 2013). Items are ordered from the least suitable (misfit) to the most suitable (fit). The fit and misfit criteria were obtained by comparing the INFIT MNSQ value of each item in Table 5 with the sum of the average values and standard deviations. A larger logit value indicates the item is in a misfit state. Items with code R6 are misfit items, as seen from the logit value, which is greater (1.26) than the mean value and standard deviation combined (1.00 + 0.15 = 1.15).

4.5 Respondent Item Value Test

This test indicates which respondents were most afraid of retaliation (Sumintono & Widhiarso, 2013), namely, respondents who tended to answer “strongly agree” and “agree” to the hypothetical. Of the 154 respondents, twenty-three responded to all hypotheticals with the highest answer, namely, 5 on the Likert scale. Respondents 014 (female), 023 (male), 041 (female), 046 (female), 056 (female), 070 (female), 082 (female), and 093 (female) had the greatest tendency to whistleblowing, regardless of the severity of potential retaliation, with a logit of 1.10. Judging from these eight, women have a stronger tendency to become whistleblowers than men.

4.6 Unidimensionality Test

We tested the instrument for unidimensionality to determine its ability to measure what should be measured (Sumintono & Widhiarso, 2013). This study is the perception of tax justice. The unidimensionality test has the same function as the instrument validity test. The percentage of the minimum limit of the unidimensionality value is 20%, meaning that the instrument is fulfilled. A raw variance value of more than 40% is better and 60% is exceptional. The amount of the variance that cannot be explained by the instrument (unexplained variance) should ideally not exceed 15%. This table shows that the raw variance measure is 53.4%, which means that the value is good and meets the requirements to achieve unidimensionality.

| Total raw variance in observations | 12.9075 | 100.0% | 100.0% |
| Raw variance explained by measures | 6.9075 | 53.5% | 53.4% |
| Raw variance explained by persons | 5.3598 | 40.7% | 40.7% |
| Raw Variance explained by items | 1.6477 | 12.8% | 12.7% |
| Raw unexplained variance (total) | 6.0000 | 46.5% | 100.0% |
| Unexplained variance in 1st contrast | 1.9676 | 15.2% | 32.8% |
| Unexplained variance in 2st contrast | 1.3552 | 10.5% | 22.6% |
| Unexplained variance in 3rd contrast | 1.2637 | 9.8% | 21.1% |
| Unexplained variance in 4st contrast | 0.8805 | 6.8% | 14.7% |
| Unexplained variance in 5th contrast | 0.5421 | 4.2% | 9.0% |

Table 5. Item fit order values

Table 6. Unidimensionality test
5. Discussion, Limitation, and Suggestions

This study investigated an instrument to measure the tendency of individuals to become whistleblowers when faced with a low or high consequences in the form of retaliation. The instrument consisted of six questions about three hypothetical fact patterns. The first hypothetical fact pattern depicted a situation in which the auditor finds false invoices paid to contractors and is faced with retaliation situations with high or low levels of consequences. The second hypothetical fact pattern depicted a situation in which the auditor discovers the purchase of counterfeit equipment and faces the possibility of retaliation with either high or low levels of consequences. The third hypothetical fact pattern depicted an auditor who found a grant of social funds had been transferred to an employee’s personal account and is faced with two possible consequences of reporting it.

Rasch modeling detected 23 outliers, all of whom answered “strongly agree” to all fact patterns. Eight respondents (six women, two men) have a tendency to report wrongdoings, regardless of the consequences.

The Cronbach alpha (KR-20) of 0.89 is categorized as a good value, meaning that both the respondent and the instrument have a high suitability. The reliability value for the survey is 0.86, means that the respondents answered consistently. The most difficult question item for respondents to answer was R6, with a logit value of 0.57. In addition, item R6 was also a misfit item, which can be seen from fact that its logit value is greater than the sum of the average values and standard deviation (1.26 > 1.15).

This study contributes to the literature on whistleblowing by using Rasch modeling. In addition, this study can empirically validate measurement instruments which are expected to be useful for further research. However, this study has several limitations, particularly its small sample size. It is hoped that future research can accommodate larger samples.

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