Scoring system as an alternative audit method in food safety management system certification body

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Abstract. Differences between auditor perceptions often occur in the audit process of the management system, even auditors from the Food Safety Management System Certification Body (FSMS CB). The auditor as an assessor is able to influence strongly to the audit report. A scoring system is a quantitative approach in auditing to eliminate subjectivity and impartiality in the auditor’s assessment. The purpose of this research was producing an internal audit checklist with a scoring system, obtaining the diversity of the auditors’ assessment on the gap analysis in FSMS CB (PT XYZ), and getting information on the sources of the diversity on the gap analysis results. The research scope was ISO/IEC 17021-1:2015 process requirements. The research method consisted of 3 steps, they were: preparation, data analysis, and cause-effect analysis. The auditors’ total scores were in the same category, which was the good category (X≥73.2%), and not significantly different at the 0.05 significance level. The diversity in the auditors’ assessment was found in 4 sub-clauses (9.1, 9.2, 9.5, and 9.9). The sources of diversity in the auditors’ assessment were personnel and tool. It could reduce by increasing the auditors’ competence and improving the internal audit system from PT XYZ.

1. Introduction
The issuance of the ISO 22000: 2018 standard in replacing ISO 22000: 2005 on 18 June 2018 by the world International Organization for Standardization (ISO) and a transition period for certification changes to its clients for 3 years until 18 June 2021 by Komite Akreditasi Nasional/ National Accreditation Committee (KAN) become a concern for all FSMS CB accredited by KAN to adjust the policies and implementation of the certification process to the new standard. Gap analysis is needed to measure the readiness of FSMS CB for the ISO 22000: 2018 certification process in food industries. By measuring methods and qualified auditors that meet the requirements, the results of the gap analysis are expected to be accurate. The results become the basis of FSMS CB to improve its policies and implementation according to the requirements, and in addition to the accreditation and certification processes in the food industries could be carried out comply to the requirements. So that, an accredited FSMS CB can provide a credible certification process in the assurance of food safety in food industry products.

Differences between auditor perceptions often occur in the audit process of the management system, even auditors from the FSMS CB. The auditor as an assessment is able to influence the audit report. Competence and impartiality are the requirements for personnel to meet the ISO / IEC 17021-1: 2015 that must be implemented by FSMS CB. Inconsistencies of requirements implementation may
result in an opportunity for audit activities (including gap analysis) to be conducted not in accordance with the requirements. In addition, the use of the qualitative method in internal audits at FSMS CB produces not measurable audit reports. A qualitative checklist as an audit tool can provide opportunities for subjectivity to the auditor's assessment.

Gap analysis can be done both qualitatively and quantitatively. The qualitative method is carried out using a checklist method which consists of a series of requirements in the form of statements with “appropriate” or “inappropriate” answers related to compliance with the requirements. The quantitative method is carried out with the scoring system as a measure of compliance with the requirements. The scoring system is designed to produce measurable audit reports, which can eliminate subjectivity and impartiality to the assessment of compliance with requirements.

Quantitative approaches are generally less debatable than qualitative. This is because the quantitative approach is more measurable and involves the use of data such as numerical data, so as to reduce subjectivity or bias [1]. The scoring system has the ability to provide information in the form of numbers so that it can provide an evaluation of the feasibility of the tested subjects in the form of an appropriate value [2], [3]. The scoring system is carried out by establishing quantitative criteria (generally with a rating/score for each answer in the list of questions to measure the significance of the audit findings and the overall conclusion of the audit results [4].

Different scoring systems are used in the gap analysis of compliance with management system requirements. In previous research, scoring of 1 to 5 is most widely used [5], [6], [7], [8], [9], [5] describes the method of scoring 1 to 5 by decision diagram to determine the level of implementation of requirements.

The purpose of this research was: 1) producing an internal audit checklist form equipped with a scoring system, 2) obtaining the diversity of the gap analysis results conducted by auditors which were related to compliance with the FSMS CB process requirements according to ISO / IEC 17021-1:2015 and 3) obtaining information on the sources of diversity on the gap analysis results in FSMS CB (PT XYZ). The research scope was ISO/IEC 17021-1:2015 process requirements. Process requirements were chosen in this study because they were used in carrying out the process in the product certification of the FSMS CB to meet ISO 22000: 2018 requirement so that the certification process in food industries could be carried out credibly.

2. Methods
2.1. Research Location
The study was conducted at the PT XYZ located in Bogor, West Java, Indonesia. PT XYZ is a FSMS CB accredited by KAN and will upgrade its accreditation for the needs of ISO 22000: 2018 certification for clients.

2.2. Material and Tool
The materials used in this study were: 1) primary data obtained from the gap analysis; 2) secondary data was ISO / IEC 17021-1:2015 and the documents and records of PT XYZ. The tools used in this study were: 1) gap analysis checklist, 2) MS Office Excel 2010 statistical tool for data analysis and 3) cause-effect diagram tool for cause-effect analysis.

2.3. Research Steps
This study consisted of 3 steps. The first step was the preparation, consisting of a literature study of process requirements in FSMS CB, auditor verification, and the development of a checklist. The second step was data analysis of the gap analysis results in PT XYZ. The third step was the cause-effect analysis of the diversity in the gap analysis results. The explanation was as follows:
2.3.1 Step 1
The first step was the preparation. It began with the literature study of the FSMS CB process requirements by accessing the KAN and IAF websites and other literature studies to ensure that these requirements were updated and valid [7]. Then, the auditor verification. It was carried out to ensure that the auditor met the competence according to the requirements of PT XYZ internal auditors [10]. Verification was carried out by matching the auditors’ track record with the requirements set by PT XYZ. The sample of the auditors who complied were 6 auditors consisting of 5 internal auditors and 1 external auditor. This number was based on the consideration of a certain criterion, which was a sample of auditors who met the requirements of PT XYZ internal auditors. In addition, the total number of internal auditors who met the ISO / IEC 17021-1:2015 standard at PT XYZ was 5 auditors. The external auditor was used as a comparison to the internal auditor in the assessment. This consideration was supported by the statement that purposive sampling could be carried out with a choice of emphasis on a sufficient number or tight limitations on the sample [11]. The sampling was a suitable technique for a common sample with certain criteria and also sampling for experts who were needed to support the study at common objectives [12]. The final step was to study and develop the ISO / IEC 17021-1:2015 internal audit checklist from PT XYZ by completing the checklist with scoring 1-5 as a measure of assessment [5]. This scoring was chosen because it was easy to understand and there was also an explanation of scoring through a decision diagram. The description of the score was according to Table 1.

Table 1. Description of the scores used in the checklist

| Score | Description                                      |
|-------|-------------------------------------------------|
| 1     | no available documents, not understanding       |
| 2     | no available documents, understanding, not implementing |
| 3     | available documents, not implementing           |
| 4     | available documents, implementing, but not consistent |
| 5     | available documents, implementing, consistent   |

2.3.2 Step 2
The second step was the implementation of gap analysis at PT XYZ [5], and data analysis of the gap analysis results. The gap analysis began with an audit plan which has been approved by PT XYZ. The implementation of the gap analysis was arranged by the researcher in accordance with the agreement with PT XYZ. In this gap analysis implementation, the method used in collecting information was in accordance with the ISO/IEC 17021-1:2015 process requirements (clause 9.4.4.2), which were interviewing, observing activity processes of the certification body, and reviewing sources and records [10]. The tool was a checklist that had been prepared in the first step. The interviews were conducted with the personnel in charge of process requirements, such as document controller, certification manager, and technical staff. Observation of the processes and activities were carried out during the gap analysis at PT XYZ. Documents and records were reviewed on all quality management system documents and records of the implementation of ISO 22000 certification at PT XYZ. After carrying out the gap analysis, the auditor submitted the results in a checklist that had been filled in a hard copy to the researcher. Furthermore, the researcher calculated the results of the assessment in the audit report from each auditor and made a soft copy of the audit record for data analysis. The data analysis consisted of 1) determining the categorization of the auditors’ assessment score, and 2) the auditors’ score test. The determination of the auditor's assessment score categorization was carried out according to the previous study with the calculations in Table 2 [2]. The auditor's score test was carried out with a one-way analysis of variance (one-way ANOVA) at a 0.05 significance level to determine whether the auditor's score was significantly different or not [13].
Table 2. Determination of the auditor's assessment score categorization

| No | Items                                                                 | Formula                                                                                     |
|----|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 1  | Determination of the gap analysis score categorization               | (1) $X_{\text{min}} = n \times \text{minimum score}$                                      |
|    |                                                                     | (2) $X_{\text{max}} = n \times \text{maximum score}$                                       |
|    |                                                                     | (3) Distribution distance = $X_{\text{max}} - X_{\text{min}}$                             |
|    |                                                                     | (4) $\sigma = \text{distribution distance}$                                              |
|    |                                                                     | (5) $\mu = n \times \text{number of categories}$                                        |
|    |                                                                     | (6) $Z_{\text{min}} = \frac{(X_{\text{min}} - \mu)}{\sigma}$                           |
|    |                                                                     | (7) $Z_{\text{max}} = \frac{(X_{\text{max}} - \mu)}{\sigma}$                           |
|    |                                                                     | (8) Low, $X < (\mu - (p \times \sigma))$                                                 |
|    |                                                                     | (9) Medium, $(\mu - (p \times \sigma)) \leq X < (\mu + (p \times \sigma))$            |
|    |                                                                     | (10) Good, $X \geq ((\mu + (p \times \sigma))$                                          |

2.3.3 Step 3
The third stage was carried out to identify the sources of the diversity in the auditor's assessment and made recommendations for corrective actions that should be taken by PT XYZ. The analysis was carried out using the cause-effect diagram tool with the consideration that it was easy to understand visually, systematically and could identify all sources of causes completely [14].

3. Results and discussion
3.1 Information on FSMS CB process requirements, PT XYZ’s internal auditor and gap analysis checklist with scoring system
Based on information in the KAN and IAF websites and other conducted literature studies, information was obtained that ISO / IEC 17021-1: 2015 is still valid and is used as a requirement for FSMS CB accreditation. The ISO / IEC 17021-1: 2015 process requirements consisted of 9 subclauses covering: 9.1 pre-certification activities, 9.2 audit planning, 9.3 initial certification, 9.4 audit implementation, 9.5 certification decisions, 9.6 certification maintenance, 9.7 appeals, 9.8 complaints, and 9.9 client records. Verification of the auditors’ track record stated that all auditors have met the requirements of PT XYZ’s internal auditors.

Verification of the auditor’s track record stated that all auditors met the requirements of PT XYZ’s internal auditors. All auditors had different educational backgrounds and periods of working experiences. The auditor of working experiences period was: > 3 years for 2 auditors, > 5 years for 1 auditor, and > 10 years for 3 auditors (including external auditors). The level of internal auditors consisted of 2 lead auditors and 3 auditors. Some auditors had not FSMS CB auditing experience according to ISO / IEC 17021-1: 2015, but all of the auditors have attended sufficient training for the competency of FSMS CB internal auditors.
The result of developing PT XYZ’s internal audit checklist was a checklist that has been completed with a score of 1-5. The total of all questions was 53. The comparison of the development results checklist with the existing checklist in PT XYZ was in accordance with Table 3.

### Table 3. The comparison of the checklist development with the existing checklist from PT XYZ

| Item                        | The existing checklist                                           | The development checklist                                      |
|-----------------------------|------------------------------------------------------------------|-----------------------------------------------------------------|
| Language                    | The original text and translation of the original text of the requirements in ISO / IEC 17021-1: 2015 | Translation of the original text of the requirements in ISO / IEC 17021-1: 2015 |
| Question number             | All clauses were according to ISO / IEC 17021-1: 2015            | Clauses and sub-clauses were according to ISO / IEC 17021-1: 2015, questions from the sub-clauses was using numbers, for example, question in clause 9.1.1 was numbering with 1 / No 1, clause 9.1.2 was numbering with 2 / No 2 |
| Checklist section           | The checklist consisted of the clause number, the contents of ISO / IEC 17021-1: 2015, the reference in the quality document, the text in the quality document, and the results of the auditor's evaluation | The checklist consisted of sub-clause number/question number, the contents of ISO / IEC 17021-1: 2015 process requirements, auditor's assessment, description of non-conformity, and recommendation |
| Assessment                  | Qualitative with “appropriate” and “inappropriate” answers and a description of non-conformity if there was a discrepancy. Observation were written in the non-conformity column | Quantitative used a score of 1-5 and a description of non-conformity if there was a non-conformity. Observation were written in a separate column |

3.2 Diversity of auditors' assessments of compliance with ISO / IEC 17021-1: 2015 process requirements at PT XYZ

3.2.1 Categorization and differences in auditor scores

According to the methods in [2], the three groups of score categories (X) were: low score category if X < 46.8%, medium score category if 46.8% ≤ X < 73.2% and good score category if X ≥ 73.2%. Based on these categories, the total score of all auditors included in the good category (Table 4). The auditors’ score test using the one-way ANOVA also gave results that were not significantly different at the 0.05 significance level (Table 5). The difference in the scores of internal auditors compared to external auditors was relatively not significant, which was 1.51% (b), 1.88% (c), and 2.26% (d, e) so that it did not provide a statistically significant difference (Table 4). The results of categorization of scores and differences in the auditors’ score indicated the consistency of the auditor's assessment using a checklist form with a scoring system as a tool for gap analysis at PT XYZ.

### Table 4. Categorization of the auditors score

| Auditor | Total score | Total score (%) | Category |
|---------|-------------|-----------------|----------|
| a       | 259         | 97.74           | good     |
| b       | 263         | 99.25           | good     |
| c       | 264         | 99.62           | good     |
| d       | 265         | 100.00          | good     |
| e       | 265         | 100.00          | good     |
| f       | 259         | 97.74           | good     |

1 external auditor (comparator)
### Table 5. One-way ANOVA test result

| Source of variation | SS     | df | MS      | F       | F crit |
|---------------------|--------|----|---------|---------|--------|
| Between groups      | 4.3889 | 5  | 0.87778 | 0.00386 | 2.40851|
| Within groups       | 10915.1111 | 48 | 227.39815 |        |        |
| Total               | 10919.5000 | 53 |          |         |        |

3.2.2 The diversity of the auditors’ assessment

There was the diversity in the auditors’ assessment from the gap analysis results at PT XYZ in 4 sub-clauses, which were 9.1, 9.2, 9.5, and 9.9, while in the other 5 sub-clauses were obtained the same results, which were 9.3, 9.4, 9.6, 9.7 and 9.8 (Table 6). Based on Table 6, the total score of auditor a was 259, auditor b was 263, auditor c was 264, auditor d and e were 265, the average score of PT XYZ's internal auditors was 263.2 and the total score of external auditors was 259. The assessment came from the score given by the auditor on each sub-clause of the process requirements. The diversity of scores in the 4 sub-clauses was supported by the difference between the average of internal auditors' score and external auditor's score in that sub-clause which were: in sub-clause 9.1 was 1.6, in sub-clause 9.2 was -0.2, in sub-clause 9.5 was 1.6, and in sub-clause 9.9 was 1.2. When compared with external auditors, there was 1 auditor with the same total score, it was 259, while the other 4 auditors were different. Four auditors produced higher total scores of 263, 264, and 265. This indicated that fewer gaps were generated and/or did not get gaps on requirements. The results also showed a low standard deviation value both on the score for each sub-clause and in the total score (Table 6). The standard deviation value in sub-clause 9.1 was 1.0, in sub-clause 9.2 was 0.4, in sub-clause 9.5 was 1.0, and in sub-clause 9.9 was 0.9 while the total score was 2.8. These scores indicated a slight variation in scores and total scores among auditors. The deviation standard was a number that indicated the degree of variance of a data set. The greater of the deviation standard, the numbers in the quantitative data were more varied or heterogeneous [15]. The smaller of the deviation standard, the data was better [16]. The total score of the auditor was the value of PT XYZ's compliance with the ISO / IEC 17021-1:2015 process requirements so that the accurate total score could affect the increase in PT XYZ's policies and implementation level.

### Table 6. Score of the results auditors gap analysis

| Sub-clauses of process requirements | Internal auditor score | The Average score a-e | f score | The difference between the average score a-e and f | Deviation standard |
|------------------------------------|------------------------|-----------------------|--------|--------------------------------------------------|-------------------|
|                                    | a  | b     | c     | d     | e     | 49.6 | 48.0 | 1.6 | 1.0 |
| 9.1                                | 48.0 | 50.0  | 50.0  | 50.0  | 50.0  |      |      |     |     |
| 9.2                                | 39.0 | 40.0  | 40.0  | 40.0  | 40.0  | 39.8 | 40.0 | -0.2 | 0.4 |
| 9.3                                | 20.0 | 20.0  | 20.0  | 20.0  | 20.0  | 20.0 | 20.0 | 0.0  | 0.0 |
| 9.4                                | 25.0 | 25.0  | 25.0  | 25.0  | 25.0  | 25.0 | 25.0 | 0.0  | 0.0 |
| 9.5                                | 23.0 | 25.0  | 25.0  | 25.0  | 25.0  | 24.6 | 23.0 | 1.6  | 1.0 |
| 9.6                                | 55.0 | 55.0  | 55.0  | 55.0  | 55.0  | 55.0 | 55.0 | 0.0  | 0.0 |
| 9.7                                | 15.0 | 15.0  | 15.0  | 15.0  | 15.0  | 15.0 | 15.0 | 0.0  | 0.0 |
| 9.8                                | 15.0 | 15.0  | 15.0  | 15.0  | 20.0  | 19.2 | 18.0 | 1.2  | 0.9 |
| 9.9                                | 19.0 | 18.0  | 20.0  | 20.0  | 20.0  | 19.2 | 18.0 | 1.2  | 0.9 |
| Total score                       | 259.0 | 263.0 | 264.0 | 265.0 | 265.0 | 263.2 | 259.0 | 4.2  | 2.8 |

f external auditor (comparator)
The diversity of the auditor's scores on the 4 sub-clauses of the process requirements was derived from the scores given by the auditors on each question in the gap analysis checklist. The diversity in scores was in sub-clause 9.1 question no.7, sub-clause 9.2 question no. 12, sub-clause 9.5 question no. 32, and sub-clause 9.9 questions no. 51 and 53. The difference between the average of internal auditors' score and external auditor's score was: in sub-clause 9.1 question no. 7 was 1.6, in sub-clause 9.2 question no. 12 was -0.2, in sub-clause 9.5 question no. 32 was 1.6, in sub-clause 9.9 question no. 51 was 0.6 and in sub-clause 9.9 question no. 53 was 0.8. The question in checklists no. 7, 12, 32, and 53 consisted of one question, while question no. 51 was divided into several points. In this study, the score was given by the auditor on each question and was not given on each point in the question. This method of assessment could lead to bias in the auditors’ assessment so that there was a diversity in the question score no. 51. The questions in checklist no. 7, 12, 32, 51, and 53 contained process requirements according to ISO / IEC 17021-1: 2015, and there were no modifications from the researcher. The diversity of scores on these questions indicated that there were differences in the auditors’ understanding of the process requirements’ implementation at PT XYZ. It was supported by the explanation that the accuracy of the score given by the auditor depended on the selection of questions or critical matters examined at the time of the audit [4].

The used of a checklist form with a scoring system had both advantages and disadvantages. The advantages of a checklist with a scoring system were: 1) the audit result reported the score of the compliance with the requirements and description of non-conformity, 2) data analysis was easier and could be processed statistically 3) could reduce the subjectivity of auditors because there were assessment standards and 4) it was easy to use. The disadvantages of a checklist with a scoring system were: 1) accuracy of the auditors’ score depended on the auditors’ good understanding of the requirements and 2) there was not a scoring system that could use as a reference for management system audits.

### 3.3 The source of the diversity in the PT XYZ auditors’ assessment and recommendation of corrective actions

The sources that might be the cause of the diversity in the FSMS CB auditors’ assessment were personnel, methods, tools, materials, environment, maintenance, and management. Personnel, in this case, the auditor could become a source of diversity if the competencies were not appropriate and were not free from bias. The method, in this case, the procedure of the FSMS CB could become a cause of the diversity in the auditor's assessment if it was not consistent in its application. In addition, a tool in the form of an audit checklist could become a cause of the diversity if it was difficult to understand and was used as a tool for assessing compliance with requirements. Material, in this case, documents and records of certification clients, could be the cause of diversity in the auditors’ assessment if there were inconsistencies in the documents and records from the auditee. The environment, in this case, the location or place where the audit was conducted could become a cause of diversity in the auditors’ assessment if the auditee provided different places between auditors for audit activities. The maintenance could become a cause of diversity in the auditors’ assessment if the maintenance of the tools used in the audit process was not carried out properly. Meanwhile, management could become a cause of diversity in the auditors’ assessment if there was no commitment from management for the internal audit activity. In this study, the sources of diversity in the auditor's assessment at PT XYZ were personnel and tools (Figure 1).

The first source was personnel, in this case, the internal auditors of PT XYZ. Based on the study, the gap of PT XYZ's process requirements implementation was low so it required good competence from PT XYZ's internal auditors to set scores and non-conformity in the implementation of requirements. Inconsistencies in the auditors’ understanding of the process requirements implementation in the question were showed in data of the diversity in total auditor score (Table 4), diversity in auditors’ assessment at 4 sub-clauses of process requirements (9.1, 9.2, 9.5, and 9.9) (Table 6), and the difference between the average of internal auditors’ score and external auditor's score in the question no. 7, 12, 32, 51 and 53. The biggest differences between the average of internal auditors’
score and external auditor’s score were found in questions no. 7, 32, and 53 because there was the greatest diversity in the auditor assessments. Competency was a requirement that must be met by FSMS CB personnel according to ISO / IEC 17021-1: 2015 requirement 7 (resources requirements). Auditor competence and experience were important things to consider in selecting auditors [17]. Auditors who meet the specified competencies could perform outstanding standard evaluations [18]. According to the verification results of the auditors’ track record in step 1, it showed that all auditors have met the competence of the PT XYZ’s of ISO / IEC 17021-1: 2015 internal auditor. Based on the verification results, it was found that all auditors had different educational backgrounds, periods of working experience, and periods of auditing experience. Based on PT XYZ’s ISO / IEC 17021-1: 2015 internal auditor competency policy, the specified educational background was D3 or S1 all majors, and a minimum of 1-year work experience in the food field industry or the relevant one. Some auditors had not audit experience on the process requirements meanwhile in this study, all of the internal auditors of PT XYZ were occupied. The difference in educational background and the periods of experience of the auditors could become the cause of the contrary in the auditors’ assessment. It was supported by the results of the previous study which stated that one of the problems in audit activities was the limited number of qualified personnel according to the scope of the audit carried out [19]. Auditor competence and experience could affect audit results [17], [18]. The periods of the auditor's experience, influence the quality of audit result was better [20].

![The diversity in the auditors' assessment](image_url)

**Figure 1.** Cause effect diagram of the diversity in the auditors’ assessment

The second sources was the method used in the implementation of the gap analysis at PT XYZ. The method, in this case was the development checklist from step 1. A quantitative checklist with a scoring system could help to reduce subjectivity in the score and non-conformity of auditors. According to the results of the study, there was variation in the scores for questions that consist of many points. The score variation was found in the score of question no. 51 with the difference in the average score of internal auditors and external auditors was 0.6. The questions of a similar score (many points) on the developed checklist were found at no. 1, 13, 15, 16, 24, 25, 35, 40, 48 but there was no diversity in the auditor's assessment. Although the variability only occurred in 1 of 10 similar questions and the difference in the average score of internal auditors and external auditors was relatively small, this data could indicate bias in the auditor's assessment because all points had the same score. The variety of the auditors’ scores on question no. 51 related to the diversity of non-conformity reported by the auditor in sub-clause 9.9. The variety scores were in points a, b, and j of question no. 51. The variety in the auditors' score was 3 auditors gave a score of 4 while the other 2 auditors gave a score of 5. The scoring system used for questions with many points could provide opportunities for auditor subjectivity so that auditors might give the same score on different implementations at the point of the requirement.
Based on the source of the diversity in the auditors’ assessment, the recommendation for corrective actions that should be taken by PT XYZ was to increase the competence of internal auditors and improve the internal audit system (Table 7). This corrective action aimed to close the causes for the diversity in the auditors’ assessment and avoid to reoccur in other audit activities at PT XYZ.

Table 7. Recommendations for corrective actions on the diversity of the auditor's assessment in the gap analysis process at PT XYZ

| Cause category | Main cause                                      | Recommendation of corrective action                                      |
|----------------|------------------------------------------------|-------------------------------------------------------------------------|
| Personnel      | Auditor competence                             | Providing additional audit experience field on the process requirements or other requirements to internal auditors |
| Tools          | Scoring system on the multiple point questions in checklist | Assessment on each point of the multiple-point questions in checklist   |

4. Conclusion
The auditors’ total scores were in the same category, it was in the good category (X ≥ 73.2%), and were not significantly different at the 0.05 level. The diversity in the auditors’ assessment was found in 4 sub-clauses (9.1, 9.2, 9.5, and 9.9). The sources of diversity in the auditors’ assessment were personnel and tool. Personnel was related to the auditors’ competence that came from difference educational background and periods of auditing experience as an auditor. The tool was related to multi-point questions in the checklist that cause bias in the auditors’ assessment. PT XYZ could reduce the diversity of auditor assessments by increasing the competence of auditors and improving the internal audit system.

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