An Assessment of Sebelas Maret University Readiness to Establish Product Certification Bodies (LSPro) for Bottled Drinking Water (AMDK) Products Based on SNI ISO/IEC 17065:2012

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Abstract. Sebelas Maret University (UNS) is currently under development to become independent university based on revenue generating. UNS already has business activities such as testing services. Based on the potential of testing services and resources, encourage UNS to develop Product Certification Bodies (LSPro) which focuses on bottled drinking water (AMDK) products. This study aims to measure the level of readiness of UNS towards fulfilling the requirements for establishing LSPro AMDK based on SNI ISO/IEC 17065. This study uses questionnaire that made based on SNI ISO/IEC 17065. Then an assessment of readiness is done by using scores 1 to 4 to assess the availability of documents, understanding and implementation of requirements. The result of measuring the readiness level is interpreted descriptively by looking at the percentage of each condition of fulfillment. Obtained the fulfillment conditions that have implemented and documented or score 4, namely 39%, which is mostly filled by structural requirements, management system requirements and resource requirements. While the rest, which is equal to 61%, is on a score 1, 2 and 3 or conditions do not yet have documentation.

1. Introduction

In the middle of intense global competition, standard roles are increasingly important for companies to improve their competitiveness. Those standards can help to improve and guarantee the quality of products and / or services produced and it can be able to facilitate national products to be more easily accepted in global market transactions [8]. To support the achievement of consistent implementation of standards in all aspects of life, it is necessary to synergize all parties starting from the government, firms and even academics in increasing competence and applying standardization and conformity assessment.

Sebelas Maret University (UNS) is one of the Public Universities (PTN) located in Surakarta City, Central Java, Indonesia. Currently UNS is under development to become PTN-BH (Legal Entity-Public University) based on revenue generating. It is intended to support the achievement of UNS goals to become independent university without relying on government funding sources. One of the UNS plans to achieve that is by optimize standardization activities, especially in conformity assessment activities, namely testing and certification services.

Currently UNS has a laboratory that can conduct testing and calibration services, namely the Technical Service Unit (UPT) Integrated Laboratory of UNS. The UPT Integrated Laboratory of UNS
has obtained accreditation by the National Accreditation Committee of Indonesia (KAN) in accordance with competency requirements of SNI ISO / IEC 17025 in the scope of testing for wastewater, river water and well water. The UPT Integrated Laboratory of UNS is also under development to prepare testing services for Bottled Drinking Water (AMDK) products and several other testing services.

In addition to developing testing services, UNS also intends to provide certification services especially product certification. The development of product certification services is carried out through the establishment of Product Certification Bodies (LSPro) at UNS. Product Certification Bodies (LSPro) must first be accredited by KAN based on SNI ISO / IEC 17065 [11]. SNI ISO / IEC 17065 contain requirements that must be met by certification bodies so that certification activities are carried out consistently. By implementing these requirements, certification bodies are more easily accepted in both national and international forums so as to spur international trade [1]. Therefore to establishing LSPro which is accredited by KAN, UNS must refer to SNI ISO / IEC 17065 so that it can carry out certification activities consistently and professionally.

In carrying out its business activities, LSPro cannot be released from a testing laboratory. So that UNS must also be supported by testing laboratories specifically for product testing to establishing LSPro. Considering that currently the UNS testing laboratory namely UPT Integrated Laboratory has the potential in testing bottled drinking water products even though it has not been accredited, making UNS focus on the designing LSPro UNS in the scope of bottled drinking water (AMDK) products.

Bottled drinking water (AMDK) is water that has passed several processes without additional food ingredients contaminated, then packaged so that it is safe to drink [3]. Currently the number of bottled drinking water industries in Indonesia is 900 factories with 2000 brands from small to large scale. The number of bottled drinking water industries will continue to increase each year, along with population growth in Indonesia [2]. The bottled drinking water industries are spread in all regions in Indonesia, but most of the distribution are in Java that one of them is in the Central Java region. At present, there are 64 drinking water industries spread around the Surakarta City and around of Central Java [3].

Based on the above conditionn, the UPT Integrated Laboratory of UNS which can carry out AMDK testing and the large number of market potential in the form of bottled drinking water industry in Surakarta and surrounding areas, amounting to 64 drinking water industries, strengthens UNS to design Product Certification Bodies (LSPro) at UNS focusing on products Bottled Drinking Water (AMDK).

One of the first steps that must be done by UNS in designing this LSPro AMDK is by measuring the level of readiness of the UNS in applying SNI ISO / IEC 17065. With the results of these measurements, it will be known the level of readiness of UNS towards fulfilling the requirements for establishing LSPro for bottled drinking water products based on SNI ISO / IEC 17065, so that it will facilitate future development efforts.

2. Research Methodology
This research has four stages, namely identification of the requirements for establishing a LSPro AMDK, develop a questionnaire framework, designing a readiness assessment questionnaire and analysis of readiness level.

The first step is identifying the requirements for establishing the LSPro. This stage is carried out by determining the requirements of LSPro quality management system document in accordance with SNI 17065:2012 and other literature studies.

The second stage is developing a questionnaire framework. Framework questionnaire is developed from the Conformity Assessment Form (FPA) 05.b-01.b regarding adequacy checklist for SNI ISO / IEC 17065: 2012. This form is used by KAN to assess LSPro's readiness in obtaining accreditation. So in this study, questionnaires were developed from the form.

The third stage is designing a questionnaire. The design of the questionnaire is carried out based on the requirements of the management system document SNI ISO / IEC 17065. After the requirements are identified, readiness assessment is then carried out using the assessment criteria described in Figure 1.
Readiness assessment is carried out with ordinal scale assessment criteria which are scores 1 to 4. Numbers on the ordinal scale have no value so that quantitative calculations cannot be carried out because these numbers are only symbols. The ordinal scale also states the category ranking where the bigger the score the better. Explanations for each score can be seen in Table 1 below.

| Score | Criteria |
|-------|----------|
| 1     | Does not have and does not understand documents |
| 2     | Understand requirements but has not done consistently |
| 3     | Implement requirements consistently but not documented |
| 4     | Requirements have been implemented and documented |

The last stage is analysis the readiness level of UNS. This analysis aims to obtain the level of readiness of UNS towards meeting the requirements for establishing LSPro based on SNI ISO / IEC 17065.

3. Result and Discussion

3.1. Identification of requirements for establishment of LSPro AMDK

In carrying out its business activities, the Product Certification Bodies must document its management system by adapting to the requirements in the SNI ISO/IEC 17065: 2012 standard. Where the requirements are presented in the following Figure 2.

Identification of requirements based on SNI ISO / IEC 17065: 2012 is carried out by identifying LSPro document requirements in each standard clause. Document requirements are obtained through the Accreditation Request Form (FPA) 10-b.01.b concerning SNI 17065 assessment report. FPA 10-b.01b is used by KAN as a reference in assessing the LSPro against compliance with SNI ISO / IEC 17065. The FPA 10-b.01b document contains the requirements of each clause of SNI ISO / IEC 17065 which is equipped with supporting documents as a condition of fulfillment of each clause. But the FPA 10-b.01b does not specify all the document requirements so other requirements need to be identified.
through literature studies on the official website of other similar LSPro and quality management system documents owned by the UPT Integrated Laboratory of UNS.

Figure 2. SNI ISO/IEC 17065 requirements.

3.2. Developing a questionnaire framework
Framework questionnaire is developed from the Conformity Assessment Form (FPA) 05.b-01.b regarding adequacy checklist for SNI ISO / IEC 17065: 2012. The form consists of SNI 17065 clause, explanation of clause, the requirements of SNI 17065 quality management system document and evaluation by KAN. The development of the questionnaire framework focuses on the document requirements and evaluation by KAN, this is because in the clause section of SNI 17065 and the explanation of the clause are still used in this research questionnaire. The development of the questionnaire framework based on FPA 05.b-01.b can be seen in Figure 3 below.
3.3. Questionnaire design

Questionnaire made based on five requirements of LSPro contained in SNI ISO / IEC 17065 namely general requirements, structural requirements, resource requirements, process requirements and management system requirements as described in Figure 2. Based on the results of identification of document requirements through FPA 10-b.01.b, literature studies on the official website of other similar LSPro and quality management system documents owned by the UPT Integrated Laboratory of UNS, 56 document requirements were obtained. An overview of the readiness assessment questionnaire is shown in Figure 4. The questionnaire also consists of codes that used to facilitate data processing later.

![Figure 3. Framework questionnaire.](image)

![Figure 4. Readiness assessment questionnaire.](image)
3.4. Analysis of readiness level to fulfill SNI ISO/IEC 17065 requirements

Respondents of this study are stakeholders or parties who will later have a relationship and interests with the AMDK LSPro at UNS. So this research questionnaire was given to the management team of the UPT Integrated Laboratory of UNS consisting of 6 people. The selection of respondents is because the management team of the UPT Integrated Laboratory of UNS is most likely to understand the requirements of LSPro documents based on SNI 17065 which have similarities to several requirements of SNI 17025 for Testing Laboratories.

At this stage an assessment of the fulfillment of the requirements for the establishment of LSPro AMDK is interpreted descriptively. Data processing is done in the form of assessment to see the level of fulfillment of UNS on each requirement.

The fulfillment of UNS conditions for each requirement can be seen in Figure 5. Based on this picture, the highest fulfillment conditions of UNS are found in conditions that the requirements have been implemented and have documentation, namely 39% or 132 requirements, followed by conditions that the requirements were not yet understood the requirements of 38% or 126 requirements, while in conditions of the requirements understanding but they have not applied 16% or as many as 55 requirements and in the conditions of the requirements have applied but not documented at 7% or as many as 23 requirements.

![Figure 5. Proportion of the level of fulfillment of requirements.](image)

Furthermore, the translation for each condition of fulfillment is carried out starting from the highest to the lowest condition of fulfillment. In figure 6, the percentages for each requirement are described, namely general requirements, structural requirements, resource requirements, process requirements and management system requirements in each compliance condition.
Based on Figure 6 above, it can be concluded that the highest proportion of conditions has applied and documented the structural requirements of 100%, which means that all requirements for structural requirements have been applied and documented. For the lowest percentage there is a process requirement of 12% or as many as four requirements out of a total of 24 requirements. Whereas conditions do not yet understand the requirements, the highest order is occupied by process requirements of 59% or as many as 17 requirements and the lowest is the structural requirements of 0% because all structural requirements are already in the condition of applying and documenting. For conditions that understand but have not yet applied, the requirements that most affect this condition are the process requirements which are equal to 27% or four requirements and the lowest position is still on the structural requirements. The last is the condition of applying but not yet documented, the highest requirement is in the general requirements of 15% or two requirements and the lowest in the structure and resource requirements of 0%, which means that all the requirements are met in other conditions.

4. Conclusion
Measuring the level of readiness of the UNS in the establishment of LSPro for bottled drinking water products was carried out using a questionnaire. The questionnaire was prepared based on the document requirements of each clause on SNI ISO / IEC 17065. Readiness assessments were carried out with ordinal scale assessment criteria, namely scores 1 to 4 where score 1 was given if not yet understood the requirements, score 2 was given if understanding but did not apply, score 3 given if it has been implemented but has not been documented and score 4 is given if it has applied and documented.

Based on the measurement results, it was found that the highest fulfillment conditions of UNS were in the conditions of applying and possessing documentation, namely 39% or 132 requirements, then the second highest fulfillment condition was in conditions not yet understood the requirements of 38% or 126 requirements, then followed by 16% in conditions of understanding but have not implemented and as much as 7% in conditions have been implemented but have not been documented. The condition of applying and having documentation has the highest value because the UPT of the Integrated Laboratory of the UNS who was the respondent of this study assessed that several LSPro requirements documents had been implemented and owned by UNS especially in terms of structural requirements and
management system requirements. Whereas for the second highest condition, the condition of not having and understanding documents is mostly found in the process requirements. This is because the process requirements consist of the technical requirements of LSPro activities which are likely not yet possessed and understood by the UNS.

Recommendations that can be given are that UNS can conduct training and introduction to the SNI ISO / IEC 17065 Quality Management System especially on process, general and resource requirements, most of which are in the condition of not having and understanding documents. Then for some documents that have been owned by UNS and / or UPT Integrated Laboratory of UNS can be redesigned and implemented into LSPro quality management system documents.

References
[1] Admaja A F S 2013 Post and Telecommunication Bulletins 11 223-34.
[2] Association of Indonesian Packaging Water Companies 2017 Sales of bottled drinking water. Accessed from https://industri.kontan.co.id/news/penujul-an-air-minum-kemasan-belum-menyegarkan
[3] Drug and Food Supervisory Agency 2013 List of Bottled Drinking Water Products [cited 9 August 2018] from the Food and Drug Supervisory Agency website: http://cekbpom.pom.go.id/index.php/home/produk/j6f5ui02f8f4ob3ov1q83l8f7/all/row/10/page/1/order/4/DESC/search/1/air%20minum
[4] Indonesian Standardization Body 2008 SNI ISO/IEC 17025 Persyaratan Umum Kompetensi Laboratorium Pengujian dan Laboratorium Kalibrasi Jakarta.
[5] Indonesian Standardization Body 2008 SNI ISO/IEC 9000 Sistem manajemen mutu - Dasar-dasar dan kosa kata Jakarta.
[6] Indonesian Standardization Body 2012 SNI ISO/IEC 17065 Penilaian Kesesuaian - Persyaratan untuk lembaga sertifikasi produk, proses dan jasa Jakarta.
[7] Indonesian Standardization Body 2014 Pengantar Standarisasi, 2nd Edition Jakarta.
[8] Indonesian Standardization Body 2018 List of Obligatory SNIs in 2018 [cited 17 July 17 2018] from the BSN website: http://bsn.go.id/uploads/download/sniwajib(upload)-september.pdf
[9] National Accreditation Committee of Indonesia 2016 DPLS 04 Rev 3, Syarat dan Aturan Akreditasi Lembaga Sertifikasi Produk, Proses, Jasa Jakarta.
[10] National Accreditation Committee of Indonesia 2018 Product LS Client Directory [cited 19 September 2018] from the KAN website: http://kan.or.id/index.php/documents/terakreditasi/doc17021/sni-iso-iec-17065/lembaga-sertifikasi-produk
[11] Ministry of Industry RI 2012 Regulation of the Ministry of Industry Number 49/M-IND/PER/3/2012 about Enforcement of compulsory Indonesian National Standard (SNI) in Bottled Drinking Water (AMDK) Jakarta.
[12] Government RI 2000 Government Ordinance Number 102 Year 2000 about National Standardization Jakarta.
[13] Government RI 2014 Constitution Number 20 Year 2014 about Standardization and Conformity Assessment.
[14] Tahir M 2011 Introduction to Educational Research Methodology Makassar.
[15] Tatterson J G 1996 Benchmarking Basics: Looking for A Better Way Manlow Park, Ca.