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Validity And Reliability Tests To Determine Critical Indicators For Coconut Supply Chain Sustainability

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Abstract— Today, the sustainability supply chain is one of the hottest discussions in the world among practitioners, academicians, and governments. Therefore, Indonesia is a developing country that also pays more attention to involvement. Indonesia has the most significant coconut production in the world, followed by India and the Philippines. However, based on previous research, the sustainability of the coconut in Indonesia is under threat to supply chain operation. Therefore, it is necessary to determine the crucial indicators of sustainable practices to measure the performance of a sustainable supply chain system. This study aims to assess an instrument's content validity and inter-rater reliability to determine a set of crucial key performance indicators (KPIs) for the sustainable supply chain coconut industry. Initially, this study reviewed the existing sustainable supply chain indicators and developed a list of indicators suitable for the coconut supply chain. Then, the indicators were assessed and validated by a group of five experts. The validity test was analyzed using Aiken's V indexes and interclass correlation coefficient (ICC). The validity test showed that the percentage of Aiken V, 60.78% (31 indicators) were valid, and 39.22% (22 hands) were invalid. In the inter-correlation coefficients test using a 95% confidence level, the ICC value obtained for the economic dimension is .743, categorized as moderate reliability; the environmental dimension is .684 (moderate); and the social dimension is .845, categorized as good reliability, and the average measure of the ICC value was .76 (good reliability). In conclusion, Aiken's V index was used to determine the number of indicators. Only 31 could be further used as an instrument to determine the critical indicators for coconut supply chain sustainability in Riau Province-Indonesia.

Keywords— Aiken's V, Content Validity, Sustainable Supply Chain, Reliability, Coconut.

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I. INTRODUCTION

A company's competitiveness can be increased through sustainable practices and a sustainable supply chain's performance measurement and management system [1]. However, the need for integration with sustainability aspects is the main problem of performance measurement in supply chain management [2]. Thus, supply chain performance can be improved by considering sustainability dimensions and developing sustainable supply chain performance Indicators [3].

Much research on sustainable supply chain management has been performed in different fields of the food sector [4]–[6]. However, the research focus on the coconut sector still needs to be expanded and requires more attention on how to make it sustainable [7]. Based on the best of the author's knowledge, previous works pay little attention to the sustainable performance e of the coconut supply chain in developing countries, especially Indonesia.

KPI determination requires systematic and measurable steps so that the indicators used can measure the desired performance. Therefore, the validity content of the instrument is very important and will be used to obtain valid input data. There have been many studies conducted by previous researchers regarding how to determine the validity of research instruments[8], [9]. However, this approach has yet to be widely used in agroindustry supply chains in determining indicators for measuring sustainable supply chain performance.

This research concentrates on analyzing the instruments' validity to determine and acquire valid and reliable indicators for intended usage as data collection instruments.

In addition, this research is expected to contribute to the literature regarding the determination of the validity and reliability of instruments, especially when it is difficult to obtain a large number of respondents and requires specific knowledge and expertise.

1.1 Sustainability

The concept of sustainability was defined in 1987 in the Bruntland report. It was then adopted by the United Nations' World Commission on Environment and Development (WCED): "Sustainability means being able to satisfy current needs without compromising the possibility for future generations to satisfy their own needs"[10], [11].

Sustainable supply chains for coconut smallholders still need to be addressed by the government and stakeholders. The sustainability of coconuts is determined by long-term, medium, and short-term planning. The supply chain of coconut smallholders needs to be longer. From farmers, collectors, and then companies, farmers can also sell to local buyers who will export abroad. The current supply chain condition only focuses on how coconuts are sold and has yet to include how coconut fruit is processed into products with better economic value. The supply chain process still uses the traditional system due to infrastructure issues.

Performance Indicators of a Sustainable Supply Chain is very essential to be determined**.** Companies solely consider economic indicators for performance measurement and evaluation in a traditional supply chain. However, indicators related to the environmental and social dimensions involved in a sustainable supply chain performance measurement still require more research. Many previous researchers have determined indicators for supply chain [12]–[14]. It means there are still many different perspectives on performance measurement in the sustainable supply chain area.

Moreover, determining relevant indicators for sustainable performance measures for decision-makers is still challenging. Therefore, many researchers have developed sustainable indicators to measure sustainable supply chain performance [2], [15]. Nevertheless, most of them only focus on the manufacturing and automotive industry. The authors have not found any literature discussing sustainable performance indicators in the coconut supply chain; this is the gap that our study aims to fill.

1.2 Validity and content validity

A commonly accepted definition of an instrument's validity is the extent to which the tool measures what it intends to measure. It is also considered a crucial indicator in the selection or application of an instrument [16]. Content validity indicates a full range of the attributes under study [17] regarding clarity, coherence, relevance of the item, and sufficiency of the dimension. Another definition of content validity is that it indicates that the items in the tool sample represent the complete range of the attribute under study. First, to develop a pool of scale items, define the construct of interest and its dimensions by

reviewing the literature, seeking expert opinions, and performing population sampling [18]. The validity coefficient is computed using Equation (i).

$$Aiken\ V = \frac{s}{(n(c-1)} \quad (1)$$

Where V is the validity coefficient of Aiken, S is the rating scale minus 1, n is the number of experts used in the validation, and c is the highest score in the rating scale [19].

1.3 Reliability Test

Reliability is the overall consistency of a measure. Reliability does not imply validity. That is, a reliable measure measuring something consistently is not necessarily measuring what you want to be measured. If the number of raters is two, Cohen's kappa can be implemented. Cohen's *kappa coefficient* is a statistic that is used to measure inter-rater reliability for qualitative (categorical) items.

A correlation coefficient is used to measure the strength of a relationship between two variables. There are many different types of correlation coefficients. The most commonly used is Person's R, which is used in linear regression. The Person correlation coefficient generally indicates the strength and direction of the linear relationship between two variables. Pearson correlation coefficient is usually used for inter-rater reliability when there are only one or two meaningful pairs from one or two raters. While Intraclass Correlation Coefficient Forms and formulations, when there are more two raters:

$$reliability\ index = \frac{\text{variance of interest}}{\text{varince of interest+unwanted variance}} \quad (2)$$

However, in practice, the ICC formula is more complex and will depend on your form. The different forms are not equivalent and can give different results when applied to the same data set. This is because each form of ICC involves distinct assumptions in their calculations and will lead to different interpretations of the data. For this case study, SPSS Version 23 was used to calculate the reliability test.

II. Research Method

2.1 Research design

This was descriptive quantitative non-experimental research with a cross-sectional design. To ensure the instrument is valid and reliable, Aiken V content validity was used. The content validity in this study was determined by quantitative analysis of expert judgments. The study starts by reviewing the existing literature concerning KPIs in the implementation of a sustainable supply chain. The main focus of this study is to determine a set of relevant, sustainable indicators. To achieve the objective, this study reviewed related literature to gather sustainable indicators and validated the identified indicators in the context of the agro-industry supply chain. The methodology employed in this study follows the stages procedure.

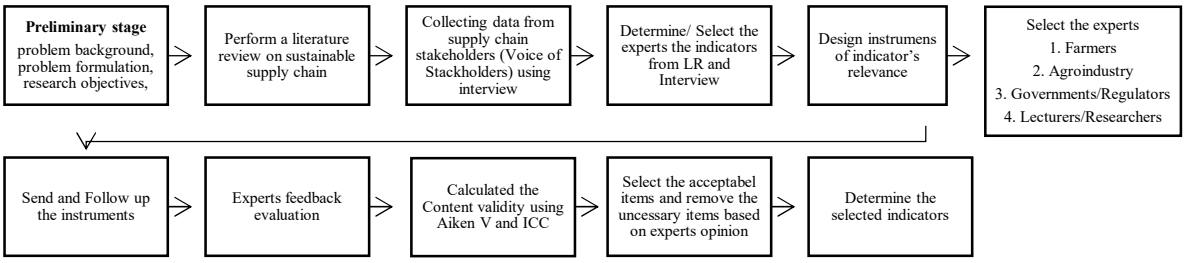

Fig. 1. The research methodology

The preliminary stage includes a study related to the problems discussed in this study, stating the problem background, problem formulation, and research objectives, and doing the preliminary literature review to determine the research gap. Next, perform a literature review to identify indicators for implementing a sustainable supply chain in the agroindustry. From the literature study and interview, 53 indicators were identified – consisting of 17 indicators from the economic dimension, 16 from the environmental dimension, and 20 from the social dimension. The indicators were assessed and validated by two experts for language conformance. Then, the instrument was sent to experts. The experts decided each indicator's relevance in the supply chain context based on their knowledge and experience using a four-point scale (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant). After collecting the data from the experts, this study calculated the validity of the content using Aiken V.

2.2 Data Collection and Participant Selection

This research was conducted in Riau Province –Indonesia, from November 2022 to February 2023. The sample was determined using purposive sampling, where the researcher appointed the respondents. Five experts validated the instruments and determined the validity of the sustainable supply chain indicators.

The assessment sheet contains some columns of essentially statements and scores in four scales for each item provided and one column for advice and recommendation. Five field experts filled out this assessment sheet on the related test items being developed. Two English language experts validated the instrument to translate the indicators to Bahasa Indonesia and vice versa before sending them to the field experts. The field experts have over ten years of experience with master's degrees and professional qualifications.

2.3 Data analysis

The content validity was analyzed using Aiken's V indexes [19]. CVI can be used to rate each instrument item in terms of its relevance to the construct. The CVI is the CVR mean for all retained items. The CVR and CVI values obtained were analyzed to determine the validity [20]. The values of the V coefficient were interpreted based on (Guilford and Fruchter, 1978) as follows: 0.80-1.00 (very high), 0.60-0.80 (high), 0.40-0.60 (medium), 0.20-0.40 (low), 0.00-0.20 (very low).

III. Result and Discussion

3.1 Characteristics of Respondents

The researcher selected five validators with over ten years of experience to validate instruments, including a supply chain professor, an industrial engineering professor, a logistics and optimization systems Ph.D., and two practitioners with international certificates and expertise in coconut agriculture.

TABLE 1. The results of the validity test (Expert validation)

No	Dimension		Index (V)	Category
1	Eco-01	Investment costs	0.73	Medium
2	Eco-02	Supplier Selection Costs	0.00	False
3	Eco-03	Logistics Costs	1.00	High
4	Eco-04	A clear common vision of supply chain management	0.27	False
5	Eco-05	Innovation potential	0.07	False
6	Eco-06	Capacity utilization	1.00	High
7	Eco-07	The perceived value of a product	1.00	High
8	Eco-08	Improved overall profitability and revenue	1.00	High

		growth.		
9	Eco-09	Operational costs	0.80	High
10	Eco-10	Customer satisfaction rates	1.00	High
11	Eco-11	Production Efficiency	0.80	High
12	Eco-12	Inventory costs	0.93	High
13	Eco-13	Production flexibility	0.80	High
14	Eco-14	Information sharing about customer requirements and design plans	0.53	Low
15	Eco-15	Use of information technologies	0.73	Medium
16	Eco-16	Availability of raw material	1.00	High
17	Eco-17	Appropriate Coconut price	1.00	High
18	Env-01	Innovation & improvement	0.73	Medium
19	Env-02	Planning and Product Design	0.47	Low
20	Env-03	Regulatory compliance	1.00	High
21	Env-04	Environmental Quality management	0.87	High
22	Env-05	Governmental Regulations	0.53	Low
23	Env-06	Management Commitment	0.13	False
24	Env-07	Selection of partners in the supply chain based on ecological guideline	0.40	Low
25	Env-08	Selecting green modes of transportation	1.00	High
26	Env-09	Resource Utilization	1.00	High
27	Env-10	Reverse Logistic	0.80	High
28	Env-11	Reverse Logistics	0.47	Low
29	Env-12	Pollution emission reduction and waste recycling program	1.00	High
30	Env-13	Noise rates	0.20	False
31	Env-14	Applying renewable sources in production	0.67	Medium
32	Env-15	Land availability	0.87	High
33	Env- 16	Fertilizer efficiency usage	0.73	Medium
34	Soc-01	Employment creation rates	0.00	False
35	Soc-02	Training Rates	1.00	High
36	Soc-03	Adoption of Safety Practices	0.67	Medium
37	Soc-04	Timely and legally paying taxes and associated	0.20	False

		charges		
38	Soc-05	Applying ethical norms of business and trade	0.33	False
39	Soc-06	Customer Retention	1.00	High
40	Soc-07	Labor Equity	0.60	Medium
41	Soc-08	Quality of employee life	0.53	Low
42	Soc-09	Labor efficiency	0.73	Medium
43	Soc-10	Injury prevention	0.53	Low
44	Soc-11	Stakeholders' involvement	0.53	Low
45	Soc-12	Employing the local community	0.00	False
46	Soc-13	local community	0.53	Low
47	Soc-14	Ensuring Human rights	0.47	Low
48	Soc-15	Child and forced labor avoidance	0.67	Medium
49	Soc-16	Establish long-term partnerships with suppliers	0.60	Medium
50	Soc-17	Wage Ratio	0.93	High
51	Soc-18	Gender Equality	0.40	Low
52	Soc-19	Labor practices and decent work	0.40	Low
53	Soc-20	human right	0.47	Low

Note: Eco: Economic, Soc: Social; Env: Environmental;

Table 1 shows that the content validation tests conducted using Aiken Methods indicated that 53 indicators were validated, only around 62.26% were valid and 37.74% were invalid. Only 31 items will be used as research instruments to determine proposed indicators in determining the sustainability of the coconut supply chain.

TABLE 2 - The Proposed Indicators for valid instruments

Dimension	Level	Indicators	***Index (V)***	**Category**
Eco-01	Strategic	Investment costs	0.73	Medium
Eco-03	Strategic	Logistics Costs	1.00	High
Eco-06	Tactical	Capacity utilization	1.00	High
Eco-07	Tactical	The perceived value of the product	1.00	High
Eco-08	Tactical	Improved overall profitability and revenue growth.	1.00	High
Eco-09	Operational	Operational costs	0.80	High
Eco-10	Operational	Customer satisfaction rates	1.00	High

Eco-11	Operational	Production Efficiency	0.80	High
Eco-12	Operational	Inventory costs	0.93	High
Eco-13	Operational	Production flexibility	0.80	High
Eco-15	Operational	Use of information technologies	0.73	Medium
Eco-16	Operational	Availability of raw material	1.00	High
Eco-17	Operational	Appropriate Coconut price	1.00	High
Env-01	Strategic	Innovation & improvement	0.73	Medium
Env-03	Strategic	Regulatory compliance	1.00	High
Env-04	Strategic	Environmental Quality management	0.87	High
Env-08	Strategic	Selecting green modes of transportation	1.00	High
Env-09	Tactical	Resource Utilization	1.00	High
Env-10	Tactical	Reverse Logistic	0.80	High
Env-12	Operational	Pollution emission reduction and waste recycling program	1.00	High
Env-14	Operational	Applying renewable sources in production	0.67	Medium
Env-15	Operational	Land availability	0.87	High
Env- 16	Operational	Fertilizer efficiency usage	0.73	Medium
Soc-02	Strategic	Training Rates	1.00	High
Soc-03	Strategic	Adoption of Safety Practices	0.67	Medium
Soc-06	Tactical	Customer Retention	1.00	High
Soc-07	Tactical	Labor Equity	0.60	Medium
Soc-09	Operational	Labor efficiency	0.73	Medium
Soc-15	Operational	Child and forced labor avoidance	0.67	Medium
Soc-16	Operational	Establish long-term partnerships with suppliers	0.60	Medium
Soc -17	Operational	Wage Ratio	0.93	High

Note: Eco: Economic, Soc: Social; Env: Environmental

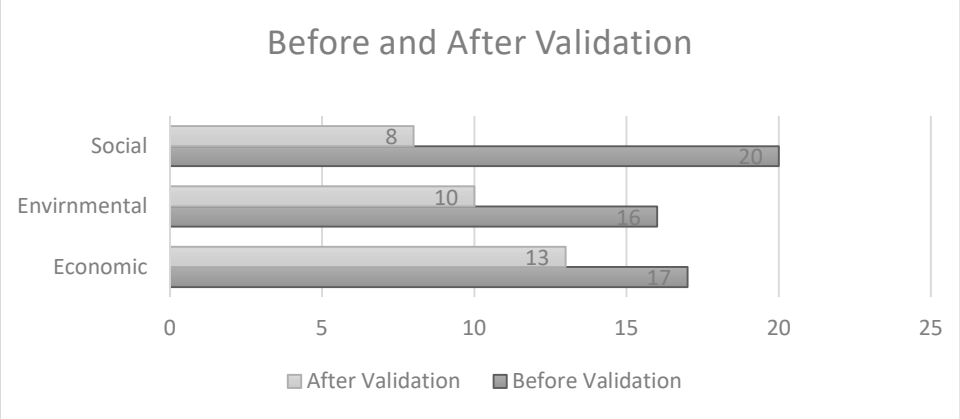

Fig. 2. Before and after the content validation process

Table 2 describes that the economic dimension has thirteen indicators, the environment has ten indicators, and the social has eight indicators. The number of indicators will be removed by about 37.74% or 22 Indicators. For the Aiken V calculation result, about 22.58% of proposed indicators were at a medium level, and the rest is at a high level (77.42%). The valid proposed indicators were selected from the medium to high category, whereas the False and low categories were not used.

3.2 Inter-class correlation

ICC was developed by Person in 1901 with three methods, namely one-way random, which means that each subject is assessed by a different set of randomly selected raters; two-way random is used if each rater assesses each subject, and raters have been selected randomly and two-way mixed. This means that each rater selects each subject, but the raters are the only raters of interest. Two random and two-way mixed will have the same result, but the results cannot be generalized [22]. The ICC value is presented in Table 3.

TABLE 3. ICC Value

ICC Value	Interpretation
0.00-0.05	Poor Reliability
0.51-0.75	Moderate Reliability
0.76-0.90	Good Reliability
0.91-1.00	Excellent Reliability

The results of the interpreter reliability test conducted using SPSS V 25 (Table 4) show that the instrument reliability test resulted in good reliability. The inter-rater reliability test was 0.781, and the Cronbach's was 0.781, which shows that all items are reliable.

TABLE 4. 1Results of the ICC test

			95% Confidence Interval		F Test with True Value 0			
		Infraclass Correlation	Lower Bound	Upper Bound	Value	df1	df2	Sig
Economic	Single Measures	.367[a]	.140	.667	4.203	12	48	.000
	Average Measures	.743[c]	.448	.909	4.203	12	48	.000
Social	Single Measures	.521[a]	.214	.842	9.457	7	28	.000

	Average Measures	.845[c]	.577	.964	9.457	7	28	.000
Environmental	Single Measures	.302a	.064	.664	3.368	9	36	.004
	Average Measures	.684c	.254	.908	3.368	9	36	.004

Referring to Table 4, in the inter-rater reliability test using a 95% confidence level, the ICC value obtained for the economic dimension is .743 categorized as Moderate reliability, the Environment dimension is .684[c] (moderate) and the Social dimension is .845[c] categorized as Good reliability. The average measure of Interclass Correlation Coefficient value was 0.76 categorized as good reliability.

3.2 Discussion

This study aimed to examine sustainable supply chain indicators' validity and inter-rater reliability. From 53 indicators, only 31 indicators were valid. 14 indicators for Economics, 10 indicators for Environmental, and 8 for social. The analysis of the consolidated outcomes of the instrument through Aiken's V that the instrument has content validity which means that there is strong consensus among the field experts. Therefore, a second-round evaluation is not required. This study just focuses on Aiken's V. Content validity using Aiken's V was implemented by many authors [23] to measure the validity of instruments.

From the instrument distributed to validators, researchers also received feedback on the quality of the instruments. Most of the validator's comments are related to the variables that are difficult to measure and the unavailability of data. Besides the contents, validators also provided feedback on the item's repetition and choice of sentences.

Validity is not an instrument's property but the property of the scores obtained by an instrument used for a specific purpose in a particular group of respondents. Since content validity is a prerequisite for other types of validity, it should have the highest priority during the instrument's development. Determination of the number of instruments used to measure supply chain performance has been carried out by many previous studies. A study conducted by Hendiani et al., (2022) resulted in 63 sub-criteria and ten criteria for sustainability triple bottom lines, including environments, social, and economic. Narimissa et al. (2020) reviewed 217 index indicators selected according to the seven-step met synthesis instruction where, as Only 31 social dimension indicators were identified by Popovic (2018).

IV. Conclusions

In the first stage of instrument development, 53 indicators were identified using a literature review and conducting deep interviews. Later, five field experts were asked to rate the indicators based on their relevance. The result shows that from 53 indicators rated by validators and validated using Aiken's V, 31 indicators or 60.78% are relevant and 39.22% are irrelevant. After analyzing the results of Aiken's V for validation and ICC for reliability, it was concluded the thirty-one indicators are valid and can be proposed as critical indicators to determine the sustainability of the coconut supply chain.

V. Acknowledgment

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VI. Limitation

Some limitations need to be pointed out:) This paper has a limited number of validators, 2) it requires a more content validity method, and 3). They are requiring more literature review specific to the agriculture supply chain.

VII. Future Research and Direction

Future research can ensure checking the instrument for reliability and other forms of validity such as the face, construct, and criterion validity for better applicability of the assessment instrument and differences across companies of all sizes. It is expected to use more validators.

REFERENCES

[1] E. Hassini, C. Surti, and C. Searcy, "A literature review and a case study of sustainable supply chains with a focus on metrics," *Int. J. Prod. Econ.*, vol. 140, no. 1, pp. 69–82, 2012, doi: https://doi.org/10.1016/j.ijpe.2012.01.042.

[2] W. Piotrowicz, R. Cuthbertson, W. Piotrowicz, R. Cuthbertson, P. Management, and V. J. Marsick, "Performance measurement and metrics in supply chains: an exploratory study," 2015.

[3] A. Jellali and M. Benaissa, "Sustainable performance evaluation of the supply chain," in *4th IEEE International Conference on Advanced Logistics and Transport, IEEE ICALT 2015*, 2015, pp. 151–156. doi: 10.1109/ICAdLT.2015.7136612.

[4] N. Yakovleva, J. Sarkis, and T. W. Sloan, *Sustainability indicators for the food supply chain*. Woodhead Publishing Limited, 2010. doi: 10.1533/9780857090225.3.297.

[5] L. Manning and J. M. Soon, "Development of sustainability indicator scoring (SIS) for the food supply chain," *Br. Food J.*, vol. 118, no. 9, pp. 2097–2125, 2016, doi: 10.1108/BFJ-01-2016-0007.

[6] E. Kusrini and R. Primadasa, "Design of Key Performance Indicators (KPI) for Sustainable Supply Chain Management (SSCM) Palm Oil Industry in Indonesia," vol. 02068, pp. 1–6, 2018.

[7] I. Gunawan, D. Trihastuti, and I. J. Mulyana, "Sustainability Issues of the Coconut Supply Chain in Indonesia," pp. 158–162, 2022, doi: 10.1109/ieem50564.2021.9672964.

[8] Y. H. Meisyarah, S. Hartini, and F. Haryanti, "The Content Validity and Interrater Reliability of Nursing Outcome Classification Self-Care for Toileting among Children with Physical Disabilities," vol. 11, no. August, pp. 255–267, 2021.

[9] F. De Ciencias, B. Artes, U. Quind, L. Mar, and D. Burgos, "Measuring digital transformation in higher education institutions – content validity instrument transformation," 2022, doi: 10.1108/ACI-03-2022-0069.

[10] C. Alzaman, "Green supply chain modelling: Literature review," *Int. J. Bus. Perform. Supply Chain Model.*, vol. 6, no. 1, pp. 16–39, 2014, doi: 10.1504/IJBPSCM.2014.058891.

[11] World Commission On Environment And Development, "Vol. 17 - doc. 149," *World Comm. Environ. Dev.*, vol. 17, pp. 1–91, 1987.

[12] H. L. Lam, B. S. How, and B. H. Hong, "Green supply chain toward sustainable industry development," in *Assessing and Measuring Environmental Impact and Sustainability*, Centre of Excellence for Green Technologies, The University of Nottingham Malaysia Campus, Selangor, Malaysia: Elsevier Inc., 2015, pp. 409–449. doi: 10.1016/B978-0-12-799968-5.00012-9.

[13] P. Ahi and C. Searcy, "A comparative literature analysis of definitions for green and sustainable supply chain management," *J. Clean. Prod.*, vol. 52, pp. 329–341, 2013, doi: 10.1016/j.jclepro.2013.02.018.

[14] M. A. Moktadir, Y. Mahmud, A. Banaitis, T. Sarder, and M. R. Khan, "Key performance indicators for adopting sustainability practices in footwear supply chains," *E a M Ekon. a Manag.*, vol. 24, no. 1, pp. 197–213, 2021, doi: 10.15240/TUL/001/2021-1-013.

[15] O. Narimissa, A. Kangarani-Farahani, and S. Molla-Alizadeh-Zavardehi, "Evaluation of sustainable supply chain management performance: Indicators," *Sustain. Dev.*, vol. 28, no. 1, pp. 118–131, 2020, doi: 10.1002/sd.1976.

[16] V. Zamanzadeh, A. Ghahramanian, M. Rassouli, A. Abbaszadeh, and H. Alavi-, "Design and Implementation Content Validity Study : Development of an instrument for measuring Patient-Centered Communication," vol. 4, no. 5, pp. 165–178, 2015, doi: 10.15171/jcs.2015.017.

[17] H. A. Devon *et al.*, "A Psychometric Toolbox for Testing Validity and Reliability," pp. 155–164, 2007.

[18] R. A. Carmines, E.G. and Zeller, "A QUANTITATIVE APPROACH TO CONTENT VA L I D I TY," 1979.

[19] L. Aiken, "Three coefficients for Analyzing The Reliability and validiy of Ratings," 1985.

[20] LAWSHE, "A QUANTITATIVE APPROACH TO CONTENT VA L I D I TY1," 1975.

[21] Guilford and B. Fruchter, "Fundamental Statistics in Psychology and Education," 1978.

[22] M. P. Portney, L.G. and Watkins, "Foundations of Clinical Research," 2009.

[23] V. Anculle-Arauco *et al.*, "Content validation using Aiken methodology through expert judgment of the first Spanish version of the Eppendorf Schizophrenia Inventory (ESI) in Peru: A brief qualitative report," *Rev. Psiquiatr. Salud Ment.*, no. xxxx, 2022, doi: 10.1016/j.rpsm.2022.11.004.

[24] S. Hendiani, H. Liao, and C. J. C. Jabbour, "A new sustainability indicator for supply chains: theoretical and practical contribution towards sustainable operations," *Int. J. Logist. Res. Appl.*, vol. 25, no. 4–5, pp. 384–409, 2022, doi: 10.1080/13675567.2020.1761308.

[25] T. Popovic, "Quantitative indicators for social sustainability assessment of supply chains," *J. Clean. Prod.*, vol. 180, pp. 748–768, 2018, doi: 10.1016/j.jclepro.2018.01.142.