



Factors Influencing Readiness towards Halal Logistics among Food and Beverages Industry in the Era of E-Commerce in Indonesia

Prafajar Suksessanno Muttaqin ^{a,*}, Erlangga Bayu Setyawan ^a, Nia Novitasari ^a

^a Logistics Engineering Study Program, Telkom University, Telekomunikasi Street No 1, Bandung, Indonesia

Corresponding author: *prafajars@telkomuniversity.ac.id

Abstract—Based on Global Islamic Economy Indicator 2019/2020 report, Indonesia is in the fourth position globally as a country that uses a Sharia economic system. Seeing Indonesia's opportunities, it should be able to act as a regional and global halal hub. Efforts to encourage the halal industry through strengthening the halal value chain are one of the strategies to encourage Indonesia to become a global halal hub player. This study utilizes the structural equation modeling to examine relationships among key factors affecting readiness towards halal logistics in the food and beverages industry in Indonesia. 13 key factors are confirmed with measurement-model results, including (1) Cleanliness, (2) Safety, (3) Islamic Dietary Law, (4) Physical Segregation, (5) Material Handlings, (6) Storage and Transport, (7) Packaging and Labelling, (8) Ethical Practices, (9) Training and Personnel, (10) Resource Availability, (11) Innovative Capability, (12) Marketing Performance, (13) Financial Performance. The population in this study is in the food and beverage industries, especially in Semarang, Yogyakarta, Malang, and Surabaya. Cluster random sampling was used in this research with as many as 150 sample respondents. A survey with an online questionnaire was conducted in this research. The structural-model results reveal directions of relationships among key factors. Resource availability, training and personnel, and innovative capability are the most important factor in halal supply chain readiness. Further research can focus on other industrial sectors, such as fashion and tourism, as stated in the 2019-2024 Indonesian Sharia Economic Masterplan.

Keywords—Halal logistics; structural equation modeling (SEM); supply chain management; food and beverages industry.

Manuscript received 10 Apr. 2022; revised 29 Sep. 2022; accepted 20 Dec. 2022. Date of publication 10 Sep. 2023.
International Journal on Informatics Visualization is licensed under a Creative Commons Attribution-Share Alike 4.0 International License.



I. INTRODUCTION

Indonesia is one of the countries with the utmost Sharia profitable system worldwide. According to Dinar Standard [1], Indonesia is in the fourth position globally as a country that uses a profitable Sharia system. For illustration, in the halal food and drink sector, the world's Muslim population spent 1.17 trillion USD in 2019 on halal food, where Indonesia has come the world's biggest consumer of halal food by spending 144 billion dollars. This eventuality is an occasion and a great challenge to increase investment and halal food products in Indonesia. As the biggest Muslim populace in the world, Indonesia has not been able to play an optimal part in fulfilling this demand. Indonesia has the world's largest Muslim expenditure on halal food. According to the Indonesian Ministry of National Planning [2], Indonesia is ranked fourth globally as a maker of halal products. Although Indonesia's import performance in Muslim fashion products, halal food, and halal tourism occasionally increase, Indonesia has a large

net import for halal products and services, resulting in a deficiency in the current account.

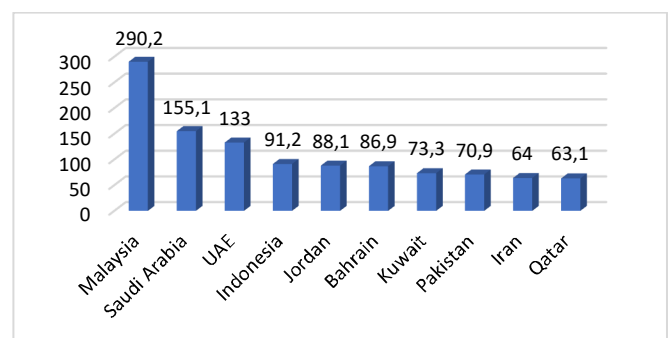


Fig. 1 Global Islamic Economy Indicator 2019/2020

Considering Indonesia's occasions, acting as a local and global halal central should be suitable. Attempting to encourage the halal industries by strengthening the halal value chain is one of the strategies to encourage Indonesia to become a global halal center player. This study utilizes

multivariate analysis to examine connections among crucial factors affecting readiness towards halal logistics in Indonesia's food and drink industries. Some previous studies have argued readiness toward halal logistics [3], [4], [5], [6], [7]. The next section of this paper presents the allied materials and method. Results and discussion are in section 3, and the conclusion is presented in the final section.

II. MATERIALS AND METHOD

A. Halal Industry

The halal industry has developed rapidly in recent years. Halal culture, same to Muslims, is widespread in different countries, actual countries with Muslim minorities. Halal is a universal indicator of product quality assurance and living principles [8]. Halal is generally associated with material effects only. Nevertheless, Halal in Islam includes deeds and works or is usually called *Muamara* [9]. Halal can be defined as a quality standard consistent with Islamic Sharia law used in any conditioning practiced by Muslims [10]. Muslims choose halal products and services as a form of submission to Islamic Sharia law. Halal is mostly associated with Muslims, but Muslims are not the only consumers of Halal products. The number of consumers of halal products from Muslim minority countries has increased significantly in recent years.

The halal industry is becoming an important thing to continue to be developed in Indonesia and the world. Halal certification guarantees that the product or service has good quality assurance. In addition, the diversity of the halal industry can provide opportunities for business actors to expand their business in the domestic and global regions and provide added value to products so that they can help strengthen the country's economy [11], [12], [13]. In addition, the public needs to be educated about the halal lifestyle and the importance of halal consumption because halal is no longer an obligation for the religious segment but to provide the necessities of life and good security for all human beings [14], [15].

B. Halal Logistics

Zulfakar, Anuar, and Talib [16] Halal Logistics applies to all conditioning, such as procurement, warehouse, transportation, and handling. Everything must be halal to value healthy products and services. The terms deal with conditioning and operations that are compatible with Halal

principles and prospects and are done with the use of Halal [17]. According to Okdinawati et al [18]. Halal operations must be covered across varied sectors across the supply chain to ensure that it meets halal logistics norms, completes Halal integrity, and certifies its halal products. Warehousing operations include halal control and instrument, for illustration, addition, placement (disposal), warehousing, value-added delivery, cross-docking, and distribution of halal products. Transport operations include sterile tanks, container vehicles, loading/ unloading, and kosher product proof for halal control and document. In addition, halal control and instrument procedures include terminal examinations, temporary warehouses, consolidation, warehousing, and proof of kosher particulars [19].

C. Structural Equation Modelling

SEM is an approach to statistics that allows examining patterns of connections between potential constituents and their indicators, potential constituents between them, and direct measurement errors. SEM allows direct analysis between multiple dependent and independent variables [20], [21], [22].

SEM with data analysis was conducted to fully describe the relationships between variables in this research [23]. Therefore, the main requirement for using SEM is to build academic models corresponding to structural and measurement models in path representations based on theoretical reasons. Relationships are established between one or more independent variables [24]. Therefore, according to this description, this approach can be used as another powerful priority over multiple regression analysis, pathway analysis, factor analysis, time series analysis, and analysis of covariance [25].

This study uses structural equation modeling to explore the relationships among key factors affecting halal logistics readiness in the Indonesian food and beverage industry. The population in this study are food and drink industries, especially in Semarang, Yogyakarta, Malang, and Surabaya. The sampling approach used was random cluster sampling with a total sample of 150 respondents. The data collection method is a survey with an online questionnaire. According to [26] and [27], sampling employing clusters randomizing to groups, not individual subjects. The investigation design is shown in Figure 2.

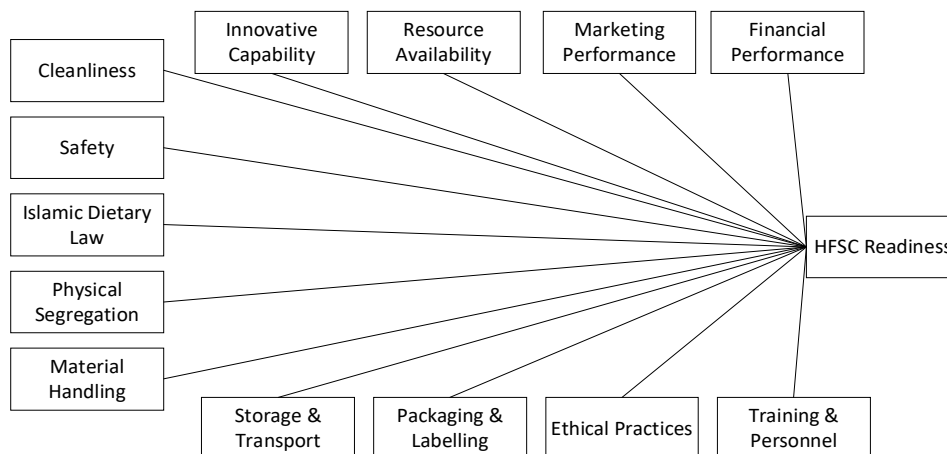


Fig. 2 Research Framework

This research used independent variables or exogenous variables. Exogenous are those whose values are determined outside the model and evaluated on the model, and exogenous changes are cleanliness, Islamic food law, safety, storage and transport, packaging, and labeling—changes in exogenous mass on physical examination. Exogenous variables include segregation, ethical practices, resource availability, innovation capacity, marketing performance, training and human resources, and financial performance. Endogenous variables are determinative variables of Halal supply chain readiness. Endogenous variables are variables whose values are determined by the model. Endogenous changes are changes in endogenous variables that correspond to exogenous changes specified in the model.

III. RESULTS AND DISCUSSION

Respondents in this research have several characteristics, including gender, age, company emplacement, and degree of education. Respondent characteristics are described in more detail in the form of detailed analyses. Descriptive analysis is an approach to the descriptive representation of quantitative data [28]. Descriptive analytics describes how data exists. Data is usually presented in graphical or tabular form but can also be in numerical form and calculated averages or standard deviations.

TABLE I
DATA DESCRIPTION

No	Variables	Percentage
1	Gender	Male 74.6% (112)
		Female 25.3% (48)
2	Age	20-30 20% (30)
		31-40 63% (93)
		41-50 18% (27)
3	Company Location	Semarang 28.0% (42)
		Yogyakarta 22.0% (33)
		Malang 21% (31)
		Surabaya 24% (36)
4	Education Level	Senior High School 2.0% (3)
		Diploma 4.67% (7)
		Bachelor 89.3% (134)
		Master 3.3% (5)
		Doctoral 0.0067% (1)

Table 1 shows 150 respondents with details, i.e., forty-eight female respondents (25.33%) and one hundred and twelve male respondents (74.6%). This data shows that males dominate industrial positions more, especially in the food and beverage industry, than women. Based on respondent age, it shows that thirty people (20%) in the 20-30 years range, ninety-three people (63%) in the 31-40 years range, and 27 people (18%) in the 41-50 years range. This data shows that 31-40 years is the more dominant years range.

Based on domicile, it shows that forty-two people (28%) are in Semarang, thirty-three people (22) in Yogyakarta, thirty-six people (24%) in Surabaya, and thirty people (21%) in Malang. This result indicates that Surabaya and Semarang have more dominant respondents. This is because big cities tend to have more industry than other cities. Based on education level, it shows that three people (2%) of respondents are in senior high school, seven people (4.67%) respondent have a Diploma, 134 people (89.3%) have bachelor's degree, five people (3.3%) have master's degree,

and one person (0.0067%) respondent have a doctoral degree. This data shows that bachelor's degree is the more dominant respondent.

The validity of the questionnaire was tested on three variables, namely lifestyle, reference groups, and purchasing decisions, with a total of 26 statements. In this study, the validity test was carried out by comparing the value of the r-test with the r-table that can be found using the distribution of the product moment table values, which is then seen from a sample of 150 with $df = (N-2)$. So, the value of the r-table is a df value of $150-2 = 148$ with a 95% confidence level of 0,163. This Table shows the results of the questionnaire validity check.

TABLE II
VALIDITY TEST RESULT

No	Variables	r-test	r-table	Result
1	I1.1	0.375	0.163	Valid
	I1.2	0.335		
	I1.3	0.443		
	I1.4	0.423		
	I1.5	0.398		
2	I2.1	0.375	0.163	Valid
	I2.2	0.335		
	I2.3	0.453		
	I2.4	0.413		
	I2.5	0.318		
3	I3.1	0.315	0.163	Valid
	I3.2	0.325		
	I3.3	0.443		
	I3.4	0.463		
	I3.5	0.338		
4	I4.1	0.325	0.163	Valid
	I4.2	0.315		
	I4.3	0.423		
	I4.4	0.453		
	I4.5	0.328		
5	I5.1	0.325	0.163	Valid
	I5.2	0.395		
	I5.3	0.443		
	I5.4	0.385		
	I5.5	0.335		
6	I6.1	0.493	0.163	Valid
	I6.2	0.433		
	I6.3	0.315		
	I6.4	0.395		
	I6.5	0.293		
7	I7.1	0.315	0.163	Valid
	I7.2	0.395		
	I7.3	0.293		
	I7.4	0.315		
	I7.5	0.325		
8	I8.1	0.325	0.163	Valid
	I8.2	0.293		
	I8.3	0.233		
	I8.4	0.248		
	I8.5	0.315		
9	I9.1	0.325	0.163	Valid
	I9.2	0.293		
	I9.3	0.333		
	I9.4	0.248		
	I9.5	0.325		
10	I10.1	0.335	0.163	Valid
	I10.2	0.393		
	I10.3	0.233		
	I10.4	0.248		
	I10.5	0.335		
11	I11.1	0.345	0.163	Valid
	I11.2	0.293		
	I11.3	0.233		
	I11.4	0.248		
	I11.5	0.325		
12	I12.1	0.325	0.163	Valid
	I12.2	0.335		
	I12.3	0.263		

No	Variables	r-test	r-table	Result
13	I12.4	0.233	0.163	Valid
	I12.5	0.248		
	I13.1	0.315		
	I13.2	0.325		
	I13.3	0.213		
	I13.4	0.243		
14	I13.5	0.258	0.163	Valid
	I14.1	0.385		
	I14.2	0.335		
	I14.3	0.493		
	I14.4	0.433		
	I14.5	0.348		

As seen in the Table above, it is known that the value of the t-test in all statements > r-table, so it can be concluded that all statements are valid. The next stage is to test the reliability of the questionnaire on research data. Reliability testing was conducted to determine whether the questionnaire's results were reliable [29]. The result of the research reliability testing of each research variable is as follows.

TABLE III
RELIABILITY TEST RESULT

No.	Variable	Alpha Cronbach	Result
1.	Cleanliness	0.716	Reliable
2.	Safety	0.720	Reliable
3.	Islamic Dietary Law	0.749	Reliable
4.	Physical Segregation	0.776	Reliable
5.	Material Handlings	0.719	Reliable
6.	Storage and Transport	0.741	Reliable
7.	Packaging and Labelling	0.726	Reliable
8.	Ethical Practices	0.740	Reliable
9.	Training and Personnel	0.769	Reliable
10.	Resource Availability	0.736	Reliable
11.	Innovative Capability	0.729	Reliable
12.	Marketing Performance	0.711	Reliable
13.	Financial Performance	0.719	Reliable
14.	Halal Supply Chain Readiness	0.721	Reliable

It can be seen in the Table that for each of the variables studied, the Cronbach's alpha value varies. The cleanliness has 0.716, safety 0.720, Islamic dietary law 0.749, physical segregation 0.776, material handlings 0,719, storage and transport 0.741, packaging and labeling 0.726, ethical practices 0.740, training and personnel 0.769, resource availability 0.736, innovative capability 0.729, marketing performance 0.711, fiscal performance 0.719, and halal supply chain readiness 0.721. From the overall value of Cronbach's alpha for each variable, it is known that all variables are said to be dependable because each variable's alpha value has a value larger than 0,6.

The measurement model is used in confluence with the Confirmatory Factor Analysis (CFA) in the SEM validity test. The CFA can validate the observed variables based on deficient indexes of observed variables or certain beginning constructions [30]. Validity and reliability tests were performed to assess whether the questions used to measure the questionnaire sub-indicators met the statistical criteria. CFA shows a factor analysis technique based on hypothetically understood or determined propositions and generalities. Critical Ratio (CR) value greater than 1.96, and P is smaller than 0.05 Multivariate validity test result is as follows.

TABLE IV
MULTIVARIATE VALIDITY TEST RESULT

			Estimate	CR	P
HSCR	<---	Cleanliness	1.695	2.15	0,025
HSCR	<---	Safety	1.273	2.64	0,016
HSCR	<---	Islamic_Dietary_Law	1.021	2.88	0,038
HSCR	<---	Physical_Segregation	1.823	2.38	0,014
HSCR	<---	Material_Handlings	1.041	2.68	0,046
HSCR	<---	Storage_Transport	1.082	2.24	0,032
HSCR	<---	Packaging_Labelling	1.053	2.5	0,038
HSCR	<---	Ethical_Practices	1.524	2.64	0,032
HSCR	<---	Training_Personnel	3.244	2.36	0,025
HSCR	<---	Resource_Availability	3.244	2.91	0,0115
HSCR	<---	Innovative_Capability	2.512	2.37	0,032
HSCR	<---	Marketing_Performance	1.522	2.96	0,041
HSCR	<---	Financial_Performance	1.042	2.61	0,032

According to Table, the CR value of all variables is 1.96 and has P<0.05. Therefore, all questions are said to be valid. The explanatory (*) symbol indicates a very low probability. A reliability test is a test that measures a variable or structural indicator. The reliability calculation approach can be performed by looking for floating exchange rates (VE) with an AVE value of 0.50. A latent variable after the AVE value can show the complete variance of the statement written. The result of the multivariate reliability test is as follows.

TABLE V
MULTIVARIATE RELIABILITY TEST RESULT

No.	Variable	CR	AVE
1.	Cleanliness	0.762288	0.710743
2.	Safety	0.752391	0.753761
3.	Islamic Dietary Law	0.772288	0.687619
4.	Physical Segregation	0.743234	0.796544
5.	Material Handlings	0.636234	0.662864
6.	Storage and Transport	0.634636	0.684628
7.	Packaging and Labelling	0.634733	0.684647
8.	Ethical Practices	0.786435	0.735335
9.	Training and Personnel	0.753735	0.775377
10.	Resource Availability	0.773585	0.742862
11.	Innovative Capability	0.735783	0.786247
12.	Marketing Performance	0.635783	0.642857
13.	Financial Performance	0.773583	0.754247
14.	Halal Supply Chain Readiness	0.753573	0.728427

This analysis shows that all the variables have a value greater than 0.50. In this section, data analysis is performed to confirm whether the data used in the study are under specific conditions. Data monitoring is done by observing the distortion of the data.

The skewness parameter can be determined through the CR value in the range of +2.58 with a rate of significance of 0.05. The results of research facts processing suggest the absence of CR. On the other hand, skewness is out of the +2.58 range. The result of the multivariate normality test is as follows.

TABLE VI
MULTIVARIATE NORMALITY TEST RESULT

No.	Variable	Skew	C.R.	Kurtosis	C.R.
1	KR1	-0.174	-0.872	0.181	0.451
2	KR2	-0.109	-1.043	0.214	0.535
3	KR3	-0.134	-1.171	0.771	1.929
4	KR4	0.065	0.323	0.942	1.355
5	KR5	-0.57	-1.85	0.85	1.125
6	KR6	0.113	0.563	0.23	0.575
7	GH1	-0.719	-1.594	1.004	1.511
8	GH2	-0.38	-1.901	0.241	0.602
9	GH3	-0.692	-1.458	0.353	0.882
10	GH4	-0.288	-1.438	0.069	0.172
11	GH5	-0.396	-1.952	0.535	1.338
12	GH6	-0.434	-1.168	0.048	0.119

No.	Variable	Skew	C.R.	Kurtosis	C.R.
13	KP1	-0.6	-1.001	0.419	1.047
14	KP2	-0.059	-0.296	0.836	1.091
15	KP3	-0.387	-1.933	1.77	1.925
16	KP4	-0.467	-1.337	0.486	1.215
17	KP5	-0.527	-1.636	0.458	1.146
18	KP6	-0.448	-1.24	0.334	0.836
19	KP7	-0.049	-0.244	-0.084	-0.211
20	KP8	-0.294	-1.468	-0.121	-0.303
21	KP9	-0.094	-0.47	-0.1	-0.25
22	KP10	-0.471	-2.357	-0.013	-0.032
23	KP11	-0.305	-1.525	0.606	1.516
24	KP12	-0.609	-1.043	1.213	2.032
25	KP13	-0.294	-1.469	0.712	1.779
26	KP14	-0.518	-1.588	1.1	1.75

We can reveal the normality level by evaluating the skew and kurtosis values of less than 3,0 on each index of each variable. The average test was performed by referring the criterion ratio (CR value) to the criteria at a significance level of 0.05 (5%) +1.96. If data do not meet the two thresholds, we can conclude that the data are not normal.

Figure 3 shows that all load factors in the complete SEM model have values greater than 0.5 (load factor > 0.5), and research by Zailani et al. [11] states that the minimum load factor is 0.5. It can be said that all load factors are acceptable. An explanation of the GFI for the complete SEM model is given in Table VII.

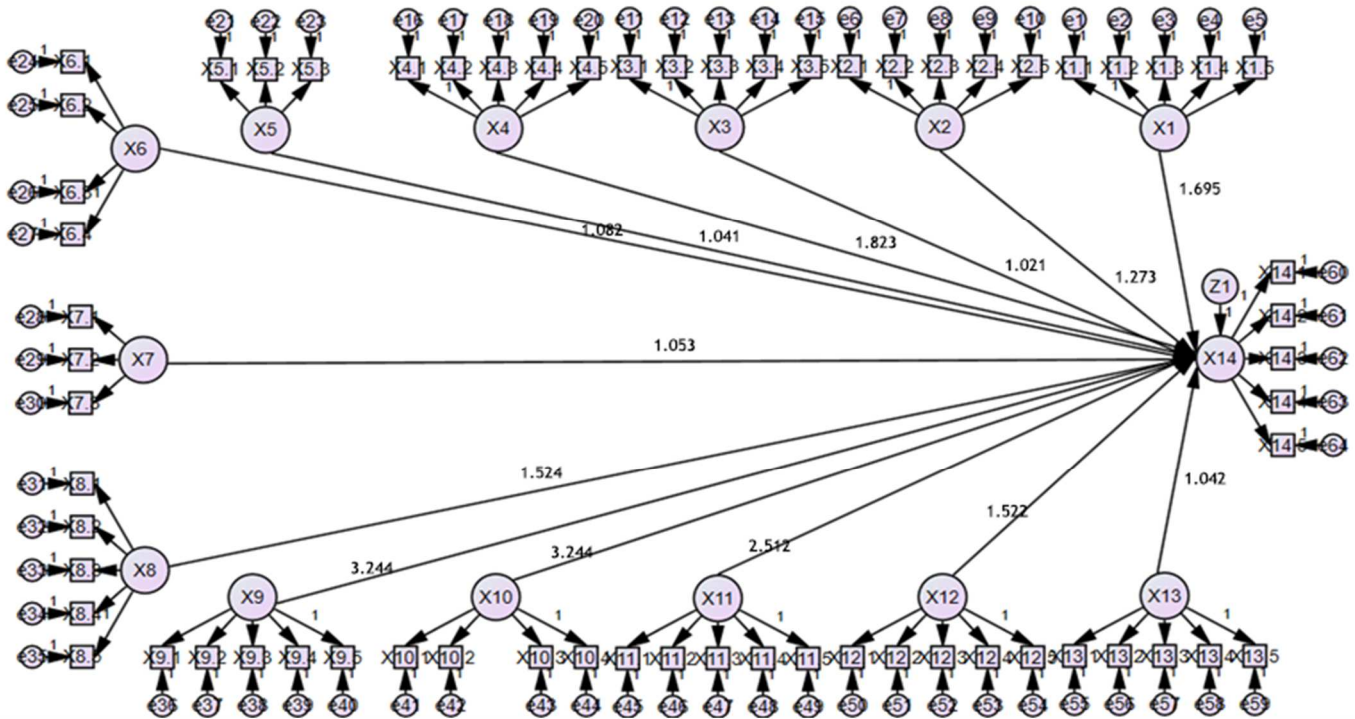


Fig. 3 SEM Analysis of Full Model

TABLE VII
SEM NORMALITY TEST RESULT

Goodness of Fit Indeks	Cut of Value	Result	Model Evaluation
Chi Square	Smaller	310	Appropriate
Probability	better	0,655	Appropriate
AGFI	≥ 0,05	0,933	Appropriate
GFI	≥ 0,90	0,974	Appropriate
TLI	≥ 0,90	0,961	Appropriate
CFI	≥ 0,95	0,956	Appropriate
CMIN/DF	≥ 0,95	0,961	Appropriate
RMSEA	≤ 2,00	0,051	Appropriate
	≤ 0,08		

In this study, hypothetical testing was performed because of the processing of exploration data using SEM analysis. The hypothetical test was performed by examining the critical ratio and probability by processing the response weight data in comparison with the threshold, i.e., the value of the Critical Ratio higher or higher than 2.00 and a probability value lower than 0.05. This is the basis for accepting and rejecting the hypothesis [31]. There are thirteen hypotheses, as explained in the previous section with the following explanation.

TABLE VIII
SEM NORMALITY TEST RESULT

	Estimate	S.E.	C.R.	P	Label
HSCR <-- Cleanliness	1,695	2,15	0,025	1,695	2,15
HSCR <-- Safety	1,273	2,64	0,016	1,273	2,64
HSCR <-- Islamic_Dietary_Law	1,021	2,88	0,038	1,021	2,88
HSCR <-- Physical_Segregation	1,823	2,38	0,014	1,823	2,38
HSCR <-- Material_Handlings	1,041	2,68	0,046	1,041	2,68
HSCR <-- Storage_Transport	1,082	2,24	0,032	1,082	2,24
HSCR <-- Packaging_Labelling	1,053	2,5	0,038	1,053	2,5
HSCR <-- Ethical_Practices	1,524	2,64	0,032	1,524	2,64
HSCR <-- Training_Personnel	3,244	2,36	0,025	3,244	2,36
HSCR <-- Resource_Availability	3,244	2,91	0,0115	3,244	2,91
HSCR <-- Innovative_Capability	2,512	2,37	0,032	2,512	2,37
HSCR <-- Marketing_Performance	1,522	2,96	0,041	1,522	2,96
HSCR <-- Financial_Performance	1,042	2,61	0,032	1,042	2,61

Research Criteria: Reject the hypothesis if the p-value is smaller than 0.05 or the $|z|$ value is greater than 1.96.

Decision:

- There is an influence between cleanliness and halal supply chain readiness
- There is an influence between safety and halal supply chain readiness
- There is an influence between Islamic dietary law and halal supply chain readiness
- There is an influence between physical segregation and halal supply chain readiness
- There is an influence between material handling and halal supply chain readiness
- There is an influence between storage and transport and halal supply chain readiness
- There is an influence between packaging and labeling and halal supply chain readiness
- There is an influence between ethical practices and halal supply chain readiness
- There is an influence between training personnel and halal supply chain readiness
- There is an influence between resource availability and halal supply chain readiness
- There is an influence between innovative capability and halal supply chain readiness
- There is an influence between marketing performance and halal supply chain readiness
- There is an influence between financial performance and halal supply chain readiness

IV. CONCLUSION

This research found that the path coefficient value of the Cleanliness variable on Halal Food Supply Chain Readiness is 1.695. This number shows that the Cleanliness Benefit variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Cleanliness variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Safety variable on Halal Food Supply Chain Readiness is 1.273. This number shows that the Safety variable positively affects Halal Food Supply Chain Readiness, and this indicates that the greater the value of the Safety variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Islamic Dietary Law variable on Halal Food Supply Chain Readiness is 1.021. This number shows that the Islamic Dietary Law variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Islamic Dietary Law variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Physical Segregation variable to Halal Food Supply Chain Readiness is 1.823. This number shows that the Physical Segregation variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Physical Segregation variable, the greater the effect on Halal Food Supply Chain Readiness.

The path coefficient value of the Material Handlings variable on Halal Food Supply Chain Readiness is 1.041. This number shows that the Material Handlings variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Material Handlings variable, the greater the effect on Halal Food Supply Chain Readiness.

The path coefficient value of the Storage and Transportation variable on Halal Food Supply Chain Readiness is 1.082. This number shows that the Storage and Transportation variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the Storage and Transportation variable value, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Packaging and Labeling variable on Halal Food Supply Chain Readiness is 1.053. This number indicates that the variable Packaging and Labeling positively affect Halal Food Supply Chain Readiness. This indicates that the greater the Packaging and Labeling variable value, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Ethical Practices variable on Halal Food Supply Chain Readiness is 1.524. This number shows that the Ethical Practices variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Ethical Practices variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Training and Personnel variable on Halal Food Supply Chain Readiness is 3.533. This number shows that the Training and Personnel variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Training and Personnel variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Resource Availability variable on Halal Food Supply Chain Readiness is 3.244. This number shows that the Resource Availability variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Resource Availability variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Innovative Capability variable to Halal Food Supply Chain Readiness is 2.512. This number shows that the Innovative Capability variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Innovative Capability variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Marketing Performance variable on Halal Food Supply Chain Readiness is 1.522. This number shows that the Marketing Performance variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Marketing Performance variable, the greater the effect on Halal Food Supply Chain Readiness. The path coefficient value of the Financial Performance variable on Halal Food Supply Chain Readiness is 1.042. This number shows that the Financial Performance variable positively affects Halal Food Supply Chain Readiness. This indicates that the greater the value of the Financial Performance variable, the greater the effect on Halal Food Supply Chain Readiness. For further research, other variables can be added in further studies that affect halal supply chain readiness. Further research can focus on other industrial sectors, such as fashion and tourism, as stated in the 2019-2024 Indonesian Sharia Economic Masterplan.

ACKNOWLEDGMENT

The Authors are grateful to the Faculty of Industrial and System Engineering and Research and Community Service Directorate of Telkom University. We are obliged to our

colleagues who contributed valuable insight and expertise to this study.

REFERENCES

- [1] Dinar Standard, "State of The Global Islamic Economy Report 2020/21," 2020.
- [2] Indonesian Ministry of National Planning, "Indonesia Islamic Economic Masterplan 2019-2024," Jakarta, 2019.
- [3] T. Ruangsriroj and A. Suwittawatt, "The Factors influencing Value Creation of Halal Logistics Service during Crisis: A Case Study of Halal Logistics Service Providers in Thailand," *Asian Journal of Business Research*, vol. 12, Oct. 2022, doi: 10.14707/ajbr.220126.
- [4] M. Nadzmi and M. Iskandar, "Factors Influencing Adoption of Halal Logistics among Warehouse Operators," Jun. 2020.
- [5] H. A. Tarmizi, N. H. Kamarulzaman, I. A. Latiff, and A. A. Rahman, "Factors Influencing Readiness towards Halal Logistics among Food-based Logistics Players in Malaysia," *UMK Procedia*, vol. 1, no. October 2013, pp. 42–49, 2014, doi: 10.1016/j.umkpro.2014.07.006.
- [6] R. Bruil, "Halal logistics and the impact of consumer perceptions," 2010.
- [7] I. Fauziyah, A. Ridwan, and P. Muttaqin, "Food production performance measurement system using halal supply chain operation reference (SCOR) model and analytical hierarchy process (AHP)," *IOP Conf Ser Mater Sci Eng*, vol. 909, no. 1, p. 12074, Dec. 2020, doi: 10.1088/1757-899x/909/1/012074.
- [8] S. H. B. Gillani, F. Ijaz, and M. M. S. Khan, "Role of Islamic Finance Institutions in Promotion of Pakistan Halal Food Industry," *Islamic Banking and Finance Review*, vol. 3, no. 3(1), pp. 29–49, 2016.
- [9] M. Y. Qardhawi, Halal dan Haram dalam Islam oleh Syekh Muhammad Yusuf Qardhawi. 1993.
- [10] A. Manaf Bohari, C. Wei Hin, and N. Fuad, "An analysis on the competitiveness of halal food industry in Malaysia: an approach of SWOT and ICT strategy," *Malaysia Journal of Society and Space*, vol. 9, no. 1, pp. 1–11, 2013.
- [11] S. Zailani, M. Iranmanesh, A. Aziz, and K. Kanapathy, "Halal logistics opportunities and challenges," *Journal of Islamic Marketing*, vol. 8, Mar. 2017, doi: 10.1108/JIMA-04-2015-0028.
- [12] M. S. Ab Talib and S. Wahab, "Halal logistics in a rentier state: an observation," *Modern Supply Chain Research and Applications*, vol. ahead-of-print, Apr. 2021, doi: 10.1108/MS CRA-04-2020-0005.
- [13] H. Mahalle, Z. Aghwan, and M. S. Ab Talib, "The premier of Halal logistics in Brunei Darussalam," 2020, pp. 67–73. doi: 10.4324/9780429329227-6.
- [14] A. Susanty, N. B. Puspitasari, A. Caterina, and S. Jati, "Mapping the barriers for implementing halal logistics in Indonesian food, beverage and ingredient companies," *Journal of Islamic Marketing*, vol. ahead-of-print, Mar. 2020, doi: 10.1108/JIMA-11-2019-0244.
- [15] A. Haleem, M. I. Khan, and S. Khan, "Understanding the Adoption of Halal Logistics through Critical Success Factors and Stakeholder Objectives," *Logistics*, vol. 5, p. 38, Jun. 2021, doi: 10.3390/logistics5020038.
- [16] M. H. Zulfakar, M. M. Anuar, and M. S. A. Talib, "Conceptual Framework on Halal Food Supply Chain Integrity Enhancement," *Procedia Soc Behav Sci*, vol. 121, pp. 58–67, 2014, doi: 10.1016/j.sbspro.2014.01.1108.
- [17] N. Karia, "Developing Halal Logistics Framework : An Innovation Approach Developing Halal Logistics Framework : An Innovation Approach The Concept of Halal Logistics," no. May 2014, pp. 328–334, 2015.
- [18] L. Okdinawati, T. M. Simatupang, A. Imran, and Y. D. Lestari, "Value Co-Creation Model of Halal Logistics Services," *Jurnal Ilmiah Teknik Industri*, vol. 20, no. 1, pp. 45–60, 2021, doi: 10.23917/jiti.v20i1.13028.
- [19] K. Musari and S. Hidayat, "ASEAN Towards a Global Halal Logistics Through the Digitally Enabled Community," *International Journal of Asian Business and Information Management*, vol. 13, pp. 1–15, Jul. 2022, doi: 10.4018/IJABIM.20220701.oal.
- [20] J. Hair, R. Anderson, B. Babin, and W. Black, *Multivariate Data Analysis.pdf*, vol. 8 edition. 2018.
- [21] W. W. S. Wei, *Multivariate Time Series Analysis and Applications*. 2019. [Online]. Available: <http://www.wiley.com/go/wsp>
- [22] N. Mubin, A. Abd Rahman, N. H. Kamarulzaman, and R. Raja Yusof, "Readiness and Stakeholders Influence for Halal Logistics Practices Implementation towards Supply Chain Performance," *International Journal of Asian Social Science*, vol. 12, pp. 26–42, Dec. 2021, doi: 10.18488/5007.v12i1.4394.
- [23] P. Dugard, J. Todman, and H. Staines, *Approaching multivariate analysis, 2nd edition: A practical introduction*. Taylor and Francis, 2022. doi: 10.4324/9781003343097.
- [24] Santoso, *Structural Equation*. 2011. doi: 10.4135/9781412983907.n1909.
- [25] B. M. Byrne, *Structural Equation Modeling with AMOS blue book*. 2017.
- [26] S. Azwar, *Metode Penelitian*. Yogyakarta: Pustaka Pelajar, 2021.
- [27] J. Macqueen, "Some Methods For Classification And Analysis Of Multivariate Observations," 2019, vol. 233, no. 233, pp. 281–297.
- [28] L. Susanna, M. Pamela, D. Susan, R. Sean, M. Daniel, and R. Sarah, "Descriptive analysis in education: A guide for researchers," 2017. [Online]. Available: <https://eric.ed.gov/?id=ED573325>
- [29] Indrawati, *Metode Penelitian Manajemen dan Bisnis Konvergensi Teknologi Komunikasi dan Informasi*. 2018.
- [30] Wijanto, *Tutorial Pengolahan Data dengan Lisrel*. 2018. [Online]. Available: http://repository.uhbarajaya.ac.id/7387/1/FIX-buku_ajar_LISREL-merged.pdf
- [31] J. J. Thakkar, "Studies in Systems, Decision and Control 285 Structural Equation Modelling Application for Research and Practice (with AMOS and R)," 2020. [Online]. Available: <http://www.springer.com/series/13304>.