

RESEARCH PAPER

# The Correlation of Efficiency, Effectiveness, Differentiation and Halal Certification Towards Logistics Performance

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## ABSTRACT

*Various studies on a firm's performance have been performed by researchers involving many variables as antecedents, and logistics performance is one of them. Aside from significantly supporting the firm, it also identifies the firm's performance as standard to keep up in short and long-term competition. There are several types of criteria for logistics performance. However, they are all only classified into three dimensions which are efficiency, effectiveness, and differentiation. From the literature review, it was suggested that halal certification could affect logistics performance. This article proposes a research model that integrates logistics efficiency, logistics effectiveness, logistics differentiation, and halal certification as the dimensions of logistics performance. It is expected to provide a theoretical contribution by explaining the causal relationship among variables and provide intact knowledge by considering the firm's performance that is determined by dimensions of logistics performance. A literature review is applied to this research. Based on the result and discussion, it can be concluded that halal certification could potentially become a new dimension for logistics performance in addition to the other three existing dimensions, yet it takes empirical research support to strengthen this proposed model.*

**KEYWORDS:** *Differentiation logistics; Effectiveness logistics; Efficiency logistics; Halal certification; Logistics performance.*

## 1. Introduction

A competitive environment thrives fiercer competition that strongly affects a firm's performance [1]. There are several explanations for a firm's performance, stating that it relates to how a firm implements its business strategies effectively and efficiently [2]; a firm's performance is defined as functions of activity results that existed in a firm and affected by both internal and external factors in order to achieve formulated objectives in a certain period [3], firm's performance is characterized as the ability of a firm to yield outputs [4]; firm's performance also defined as a multi-dimensional construct that includes not only finance performance [5]; firm's performance indicates the appropriateness of achievement level or business target with

established output or attainment by the end of business period [6]; firm's performance reflects the aptness of a firm in attaining its purposes [7]. A firm's performance plays an important role in business growth. It could develop its business properly and maintain its sustainability. A firm's performance can be a guideline for operating efficient businesses to earn business superiority and sustainability [8]. Many kinds of research on a firm's performance have been conducted by involving various variables as antecedents, one of them is logistics performance [9]; [10]; [11]; [12]; [13]. Besides other fields' performance, such as production, marketing, financial, human resources, and others, logistics performance could not only help the firm but might identify the firm's

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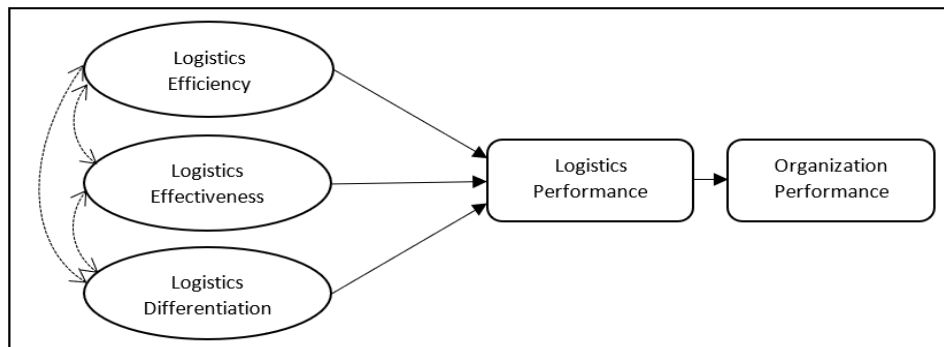
performance as a standard to keep its competitiveness in the short and long term.

Logistics performance is defined as the efficiency and effectiveness of performing logistics activities [13]. This definition later be extended by Langley and Holcomb [14] by incorporating logistics differentiation as a key element of logistics performance since the values received by customers from logistics activities also functioned as an indicator of logistics performance. Then, the definition by Langley and Holcomb [15] was further extended by Smith [16], who suggested logistics performance as a second-order construct that consisted of logistics efficiency, effectiveness, and differentiation. There are multiple types of logistics performance criteria that mostly could be classified into three specific dimensions, which are efficiency, effectiveness, and differentiation. It was proved from previous research that logistics performance is considered multi-dimensional and could be defined as the level of efficiency, effectiveness, and differentiation, which is related to the achievement of logistics activities [17];[18]; [19].

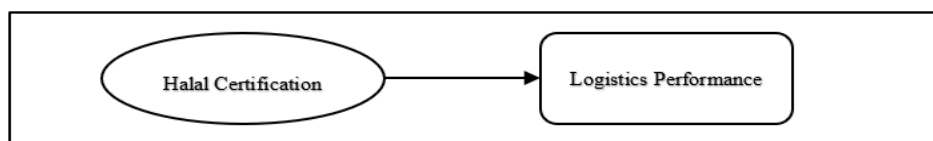
In the next development, Ab Talib et al. [20] argued that a firm's performance, in logistics

particularly, could be affected by another element, which is halal certification. This recommendation arises from studies stating that the performance of a firm is driven by employee competence, directly or indirectly [21]; [22]; capability and logistics resources connect positively with the performance of logistics performance [23]; [24]; [25]; [26]; skilled logistics expert could influence the performance of logistics[27].

Research that studies the influence of logistics efficiency, effectiveness, and differentiation toward a firm's performance through logistics performance has been conducted by Fugate et al. [28]; Smith [29]; Bobbitt [17]; Nevertheless, the comprehensive research that studies the influence of three logistics performance dimension towards firm's performance by involving other key elements of logistics performance cannot be discovered yet. Hence, this article suggests a research model that integrates the model of logistics performance developed by Fugate et al. [31], as shown in Figure 1, with the model that demonstrates a correlation between halal certification towards the performance of logistics proposed by Ab Talib et al.[32] that is illustrated by Figure 2.



**Fig. 1. A model of logistics performance (Source: [13])**



**Fig. 2. Model of halal certification and logistics performance relationship (Source: (Ab Talib, Hamid, & Chin, 2012))**

Based on the correlation model between halal certification and logistics performance developed by Ab Talib et al. [18], this research aims to equip the theoretical research gap by adding halal certification as a new variable in the logistics performance model introduced by Fugate et al. [13], that involved logistics efficiency, logistics effectivity, and logistics differentiation. Later, it can be identified the novelty of the research is the

presence of a halal certification variable, in addition to the existing variables: logistics efficiency, logistics effectivity, and logistics differentiation. Later, logistics performance may also influence a firm's performance. The theoretical contribution of the research is to establish a model of logistics performance in addition to deliberate the important role of halal certification in improving the logistics performant

that eventually leads to the enhancement of the company's performance.

## 2. Research Method

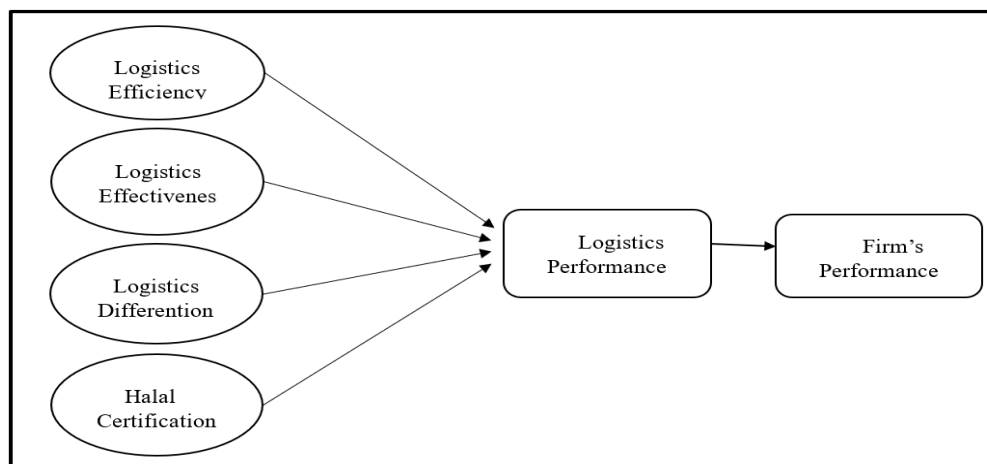
A literature review is employed for this research. Review is applied to literature that discusses logistics performance dimensions and their relations with a firm's performance and literature that discuss halal certification and its correlation with logistics and a firm's performance. The proposed model that is generated from the literature review will later be tested with an instrument test involving 30 primary data originating from the questionnaire. Initially, the questionnaire was distributed to respondents, which were business units represented by logistics heads or logistics supervisors. The distribution to business units was carried out in regencies and cities scattered in Central Java and Yogyakarta Province. It consisted of both opened and closed questions that covered: an assessment of logistics efficiency, logistics effectivity, logistics differentiation, halal certification, logistics performance, firm's performance, and company's profile. The discussion is limited to tools that are claimed to be valid and reliable. The further proposed model verification, including bigger data and appropriate analysis tools, is arranged for the next research.

## 3. Result and Discussion

### 3.1. Proposed Model

A theoretical model of halal certification and logistics performance was recommended by Ab Talib et al. [18] that presented a synthetic variable previously unconnected to be integrated with Resource Based View (RBV) as the basis of the theoretical framework. The findings suggest appropriate resource implementation. In such a case, logistics performance can be positively affected by halal certification. This is in line with research conducted by Fugate et al. [13] that suggested future research to result in objective stages for logistics performance.

Based on both models of logistics performance developed by Fugate et al. [13] and the model of halal certification and logistics performance correlation proposed by Ab Talib et al. [18], this article suggests a research model that integrates above designated models. This is intended to fill up the theoretical research gap by including halal certification as a new key element in the logistics performance model, in addition to logistics efficiency, effectiveness, and differentiation that was developed by Fugate et al. [13]. The model, which is resulted from the above integration, is illustrated in Figure 3.



**Fig. 3. Proposed model**

### 3.2. The correlation between logistics performance dimension towards logistics performance

#### 3.2.1. The correlation of logistics efficiency, effectiveness, and differentiation towards logistics performance

The correlation between logistics efficiency towards logistics performance exists in the research that defines logistics performance as the

level of efficiency, effectiveness, and differentiation, which is related to the achievement of logistics activities [17]. It was also mentioned in the research suggested that logistics performance is considered as the second-order construct, which is built by logistics efficiency, effectiveness, and differentiation [13]; time taken to accomplish commercial transactions is considered the important factor in logistics performance [26]; developed countries tend to be

more superior in terms of proper logistics performance with lower CO2 emission [27]; advance national transportation system is able to deal with the cost for a certain distance [28].

The correlation between logistics effectiveness and logistics performance, besides being mentioned in the research of Bobbitt [17] and Fugate et al. [13], also stated in another research indicates that the assessment of logistics performance, in terms of effectiveness could alter the evaluation of performance on logistics requirements to assess the value of object specification that leads to performance enhancement [29]; transportation and order process has a correlation with logistics performance [30]; six components (cost, custom, infrastructure, effectiveness, competence, environment friendly) could be used to assess logistics performance [31].

The relationship of logistics differentiation with logistics performance, besides being mentioned in the research of Bobbitt [17] and Fugate et al. [13], also existed in the research that suggested innovation in logistics and differentiation in logistics service will positively influence logistics performance [32].

### **3.2.2. The correlation between halal certification with logistics performance**

Halal certification could possibly affect the logistics performance [18]. This statement was derived from research suggesting that a certain certification could affect a firm's performance [33]; a firm that earns the certification can report the performance enhancement [34]. A finding is originated which indicates the relationship between certification and firm performance [35]; two variables of halal certification practices are positively and significantly related to hotel performance, which are staff's policy and facilities [36].

Ab Talib et al. [18] synchronized halal certification with other guarantee's standards, based on the result of research indicates the products or services, which have been certified may alter the output of the company (Pun & Bhairo-Beekhuo, 2008); The most essential elements that might win the global market share and maintain the customers are certification and halal logo (Noordin, Noor, Hashim, & Samicho, 2009); halal-certified firms can capture the opportunity to expand the business by labelling the products to halal certification, which potentially can lead to the growth of food product marketing and Islamic tourism industry (Marzuki, Hall, & Ballantine, 2012); (Marzuki, Hall, & Ballantine,

2012); halal certification gives effect to financial for halal product producer (Tieman, Van der Vorst, & Ghazali, 2012); halal standard and practices could be compared and aligned with the principles and concept of Hazard Analysis and Critical Control Points (Zzaman, Febrianto, Zakariya, Abdullah, & Yang, 2013); halal certification approach is found to be reliable with the best practice implemented by other standard types of quality assurance for foods (Latif, Mohamed, Sharifuddin, Abdullah, & Ismail, 2014).

The evidence of halal certification and logistics performance correlation in the hotel industry is revealed by research, which appointed that halal certification is highly related to human resources issues, especially in halal certification training [36]; the management responsibility and staff's policy in halal certification are positively and significantly influence the performance [36]; in halal certification, facilities and staff's policy have significant correlation with hotel performance [36].

### **3.2.3. The correlation between logistics performance and a firm's performance**

The correlation of logistics performance with a firm's performance is based on research that reveals a positive relationship between logistics performance and organizational performance in the manufacturing sector [9]; (Green, Whitten, & Inman, 2008); logistics ability and strategies should be aligned appropriately to achieve superior firm's performance (Lynch, Keller, & Ozment, 2000); the high impact of logistics and marketing as the success factor in retail companies (Schramm-Klein & Morschett, 2006); the mutual relationship among logistics performance dimensions and their impact towards overall organization performance, especially in manufacturing companies [13].

### **3.3. Theoretical and practical contribution**

It is explained in the proposed model that the firm's performance is affected by logistics efficiency, effectiveness, differentiation, and halal certification as dimensions in logistics performance. This proposed model is expected to be able to explain the causal relationship among variables and provide a contribution to knowledge by observing the firm's performance model that is determined by logistics performance dimensions, which are logistics efficiency, effectiveness, differentiation, and halal certification.

This proposed model is intended to provide the

firm's leaders with inputs to enhance the firm's performance. For that purpose, it takes the improvement of logistics efficiency, logistics effectiveness, and logistics differentiation. This proposed model is expected to disclose that halal certification, aside from being applied as a tool to earn business legitimation, could also be employed as a mechanism to enhance the performance of a firm in logistics performance. Halal certification is considered one of the firm resources, among others, that could be the source of logistics performance. Halal certification can be actualized in the form of certification, specific logos, guidelines of process, and intangible resources, such as image and reputation for the providers. Moreover, once the designated halal certification is applied in the whole internal process, as well as the operation, hence it will function as the source of positive logistics

performance [18].

### 3.4. Instrument test

The instrument applied in this research is the questionnaire aims to capture relevant information aligned with predetermined indicators. It is equipped with standardized alternative questions on a scale of 1 to 6. The selection of an even scale is carried out under two considerations. First, the even scale balances the selection. Secondly, the Indonesian culture allows the respondent to choose a considerably safer answer, so the central tendency on selection is considered high. Therefore, an instrument test on the questionnaire is required to make it valid and reliable by spreading it to 30 respondents. The result is shown in Table 1.

**Tab. 1. Data for instrument test**

N o.	LE 1	LE 2	LE 3	LE 4	LE 5	LE 6	LK 1	LK 2	LK 3	LK 4	LK 5	LD 1	LD 2	LD 3	LD 4	LD 5	LD 6	LD 7	LD 8
1	5	4	6	5	5	5	5	5	4	6	5	5	5	4	5	5	5	5	6
2	6	6	6	6	6	6	6	5	5	5	5	6	6	5	6	6	5	5	6
3	6	5	5	2	3	4	3	3	3	3	3	4	4	4	4	4	4	4	5
4	5	5	5	3	5	3	5	4	4	3	4	4	5	4	4	5	4	4	5
5	5	4	4	5	4	4	5	4	4	4	4	4	5	5	5	5	5	5	5
6	5	5	4	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
7	5	6	4	3	5	5	4	6	4	4	5	6	4	4	4	5	5	4	3
8	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4
9	1	1	2	3	2	6	4	3	3	4	4	4	5	4	4	4	4	4	4
10	4	4	3	4	4	4	3	4	4	4	4	4	3	3	4	4	4	4	4
11	6	6	6	6	6	6	6	5	5	5	5	6	6	5	6	6	5	5	6
12	5	5	5	5	5	5	4	3	3	4	5	5	5	4	4	5	3	5	5
13	5	5	5	4	4	4	5	4	4	4	4	5	5	5	5	5	5	5	5
14	5	5	5	5	5	5	6	5	4	5	5	4	5	5	5	5	5	5	5
15	5	5	6	4	4	4	2	4	3	3	3	2	2	3	2	2	2	3	2
16	3	6	4	3	6	2	5	4	4	4	4	5	4	5	4	4	5	3	4
17	5	4	5	5	4	4	5	5	4	5	6	5	6	5	5	5	5	5	6
18	5	5	5	4	5	5	5	4	5	5	5	5	6	6	6	5	5	6	5
19	6	6	6	4	5	5	6	4	4	5	5	6	5	5	4	5	5	5	6
20	6	5	6	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
21	4	5	5	5	4	5	5	4	4	4	5	5	4	4	5	5	5	4	5
22	5	5	5	4	4	5	5	5	4	4	4	4	5	3	3	5	4	4	5
23	5	5	5	4	4	4	4	5	4	4	4	3	3	4	4	5	4	5	5
24	6	5	5	5	5	5	5	5	4	5	5	3	5	5	5	5	5	5	5
25	5	4	4	5	5	5	5	6	3	3	5	3	4	3	4	5	4	5	5
26	5	5	5	4	4	4	4	5	4	4	4	3	5	5	5	6	5	6	6
27	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28	5	5	4	4	5	5	5	5	5	6	5	4	5	4	5	5	5	5	5
29	4	4	6	5	4	5	4	4	5	4	4	5	5	5	5	6	5	6	6
30	4	3	2	4	3	5	4	4	4	4	3	5	5	3	4	6	3	4	6

**Tab. 1. Data for instrument test (continuation)**

	HC 1	HC 2	HC 3	HC 4	HC 5	HC 6	HC 7	HC 8	LP 1	LP 2	LP 3	FP 1	FP 2	FP 3	FP 4	FP 5	FP 6	FP 7
1	6	5	6	6	6	6	6	6	2	6	6	6	6	6	6	5	5	5
2	6	6	6	6	6	6	6	6	5	6	5	6	6	6	5	6	6	5
3	6	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	3	4
4	5	3	3	5	3	3	5	4	3	4	3	4	4	4	4	5	4	4
5	6	6	5	5	5	5	6	6	5	5	5	4	4	5	4	4	4	4
6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4

7	3	4	4	4	5	5	5	4	5	3	5	4	4	4	4	5	5	5
8	6	6	6	6	5	5	6	6	5	5	5	4	4	4	5	4	4	4
9	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4
10	5	5	5	5	5	5	6	5	4	4	3	4	4	4	3	4	4	4
11	6	6	6	6	6	6	6	6	5	6	5	6	6	6	5	6	6	5
12	6	6	6	6	6	5	6	6	5	5	5	6	4	4	4	6	4	4
13	6	6	6	5	5	5	6	6	5	5	5	5	5	5	5	5	5	5
14	6	5	5	6	5	5	5	5	4	5	5	5	5	5	5	5	5	5
15	5	5	5	5	5	5	6	6	3	5	3	4	5	5	5	6	4	4
16	4	6	5	6	5	5	5	5	2	2	2	3	4	4	4	4	5	4
17	6	6	6	6	5	5	6	6	5	5	5	5	5	5	4	5	5	4
18	6	6	6	6	5	5	6	6	6	6	6	5	5	5	5	5	5	5
19	6	6	6	5	4	5	5	5	3	4	3	5	4	4	5	5	5	4
20	6	6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	4	4
21	6	6	6	4	6	4	6	5	4	4	5	4	5	5	5	4	4	4
22	6	5	5	5	5	6	6	5	5	4	5	4	4	5	6	5	4	4
23	5	5	5	5	3	4	4	4	3	4	4	5	5	5	5	5	5	4
24	6	6	6	6	6	5	6	6	5	5	5	6	5	5	5	5	5	5
25	6	5	5	5	4	4	6	5	4	4	3	5	4	4	3	5	5	4
26	6	6	5	4	6	4	6	5	4	4	5	4	5	5	5	5	5	4
27	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28	5	5	5	5	5	4	5	5	4	4	5	4	4	4	5	4	4	4
29	6	6	5	5	6	5	5	6	5	5	5	5	5	6	5	5	5	6
30	6	4	4	4	3	4	5	4	3	5	4	5	4	5	4	4	3	3

Data source: (Qurtubi, 2020)

### 3.4.1. Validity test

Product Moment Person Correlation with SPSS is applied for the validity test. The results are shown in Table 2.

**Tab. 2. The result of the validity test**

Variables and Sources of Indicator	Indicators	Symbol	r count
Logistics Efficiency (LE); [17], [13]	The value that represents the logistics performance of a business unit:		
	1. The order is delivered to customers from the main location that is appointed to serve the customers	LE1	0.841
	2. Line Item Fill Rate (Order items the picking operation actually found)	LE2	0.742
	3. Orders Shipped on Time.	LE3	0.810
	4. Shipments Requiring Expediting.	LE4	0.611
	5. Inventory Turns per Year.	LE5	0.821
	6. Average Order Cycle Time (time in days between order receipt and order delivery).	LE6	0.409

Logistics Effectiveness (LK); [17], [13]	Actual performance compared to planned performance:	LK1	0.838
	1. Sales (IDR)		
	2. Transportation costs	LK2	0.744
	3. Warehousing costs	LK3	0.817
	4. Inventory costs	LK4	0.870
	5. Total logistics costs	LK5	0.832
Logistics Differentiation (LD); (Bobbitt, 2004), [13]	Compared to competitors:		
	1. Damage free deliveries	LD1	0.742
	2. Finished goods inventory turns	LD2	0.876
	3. Forecasting accuracy	LD3	0.711
	4. Line item fill rate	LD4	0.877
	5. Time between order receipt and delivery	LD5	0.834
	6. Time on backorder	LD6	0.749
	7. Total inventory turns	LD7	0.744
	8. On-time delivery	LD8	0.795
Halal Certification (HC); [18]	Based on the condition in each business unit:		
	1. Stronger costumers trust	HC1	0.593
	2. Intacted quality and integrity of the halal product	HC2	0.841
	3. Timely distribution of halal product	HC3	0.894
	4. The customers depend on timely distribution, and halal logistics serve this type of service since the operation is prevented from inducing difficulties and obstructions.	HC4	0.708
	5. The financial impact that promises a bigger revenue than the operational cost in halal logistics.	HC5	0.816
	6. Certification, distribution and handling cost can be transferred to customers	HC6	0.753
	7. The distribution of halal products is seamless, as halal certification is a mark of assurance	HC7	0.753
	8. Enable the cross-border distributioan since certification facilitates market expansion.	HC8	0.927
Logistics Performance (LP); [13]	Based on logistics performance of a firm:		
	1. Overall logistics performance is well above the industry average.	LP1	0.848
	2. In general, our logistics performance is excellent.	LP2	0.829
	3. Outstanding at performing our logistics activities.	LP3	0.903
Firm's Performance (FP); (Lynch, Keller, & Ozment, 2000), (Tracey, 2008), (Baker & Sinkula, 1999), (Matsuno, Mentzer, & Rentz, 2000) [13]	Compared to main competitors:		
	1. Overall performance	FP1	0.788
	2. The growth of market share in the main market	FP2	0.900
	3. Sales growth	FP3	0.848
	4. Sales percentage resulted from a new product	FP4	0.684
	5. Return on sales	FP5	0.784
	6. Return on assets	FP6	0.802
	7. Return on investment	FP7	0.758

Data source: (Qurtubi, 2020)

Based on the result of the validity test, the instrument is stated as valid since the entire  $r$  count  $> r$  table 0.361; all Sig.(2-tailed) values  $< 0.05$ .

### 3.4.2. Reliability test

The reliability test is carried out by employing Cronbach's Alpha, which is bigger or equal to 0.70. The results are demonstrated in Table 3.

**Tab. 3. The result of the reliability test**

Reliability	Cronbach's Alpha	Description
Logistics Efficiency	0.805	Reliable/consistent
Logistics Effectiveness	0.869	Reliable/consistent
Logistics Differentiation	0.915	Reliable/consistent
Halal Certification	0.910	Reliable/consistent
Logistics Performance	0.820	Reliable/consistent
Firm's Performance	0.900	Reliable/consistent

Data Source: (Qurtubi, 2020)

Based on the result of the reliability test, the instrument is stated as reliable since all Cronbach's Alpha values  $> 0.60$ ; Cronbach's Alpha  $> 0.361$  (r table). Considering that it can be confirmed that the instrument met the requirements of valid and reliable tools, therefore the research can be continued to test the proposed model.

#### 4. Conclusion

The proposed model is the result of the integration of the logistics performance model that was developed by Fugate et al. [13] and the model which has a correlation between halal certification and logistics performance that was first proposed by Ab Talib et al. [18]. In the proposed model, it could be said that a firm's performance is affected by logistics efficiency, effectiveness, and differentiation as logistics performance dimensions. While halal certification is considered a key element of another logistics performance. The proposed model is reinforced with fundamental relation between the logistics performance dimension and halal certification towards the firm's performance. There is a novelty in this proposed model, which is fulfilling the theoretical research gap by involving halal certification as the key element of the logistics performance model. This research provides managerial implications to heads/supervisors who are in charge of logistics for the beverage industry to improve business performance. This research model describes how logistics performance affects a firm's performance. Future research is projected to reinforce this proposed model by performing empirical research in the halal-certified firm using Resource-Based Theory (RBT) employed as a theoretical framework.

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