

# IOP - The Role of Communication

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# The Role of Communication as Mediator of the Commitment Effect on the Marine Fish Supply Chain Performance at *Bangliau* in Bagansiapiapi Riau, Indonesia

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**Abstract.** This survey study aims to analyse the role of communication as a mediator of the commitment effect on the marine fish supply chain performance to *bangliau* (distributors' fish landing site) in Bagansiapiapi, Riau Province, Indonesia. The unit of analysis for this study was 40 units *bangliau*, namely a place of collection, distribution, and marketing of fish. Respondents were 40 *bangliau* owners/managers who were taken by the census method. The data was collected using a closed questionnaire, containing several statements measured by a 5-point Likert scale. The data collected includes communication (language, clarity of message content, communication frequency, decision without pressure, and communicates honesty); commitment (affective, avoiding opportunists, normative, continuous improvement, goal oriented, confidence); and supply chain performance (the smoothness of the goods flow, money flow, and information flow). There were two hypotheses proposed in this study: commitment has a positive and significant effect on the marine fish supply chain performance in *bangliau* (H<sub>1</sub>); and commitment mediated by communication has a positive and significant effect on the marine fish supply chain performance in *bangliau* (H<sub>1a</sub>). The data were analysed using the Structural Equation Model (SEM) method, using the Smart Partial Least Square (SmartPLS) software version 3.0. The results show that commitment has a significant effect on the marine fish supply chain performance, but the role of communication as a mediator can further increase the commitment effect. The reason is that communication can increase understanding and help equalize perceptions of the marine fish supply chain among the entities involved.

## 1. Introduction

Bagansiapiapi in Riau Province is one of the most important centres of the fishing industry in western Indonesia. Fish production in this area is distributed to North Sumatra, parts of Java island, and exported to Malaysia. Fish distributors in Bagansiapiapi are known as *tauke* (fish collectors/distributors), who buy fish from indigenous Malay fishermen. *Tauke* accommodates fish supplied by fishermen in *bangliau*, namely a place to unload, distribute and market fish. *Tauke* and *bangliau* are of Chinese origin language referring to the ethnicity of the distributors, all of whom are Indonesian citizens of Chinese descent [1].



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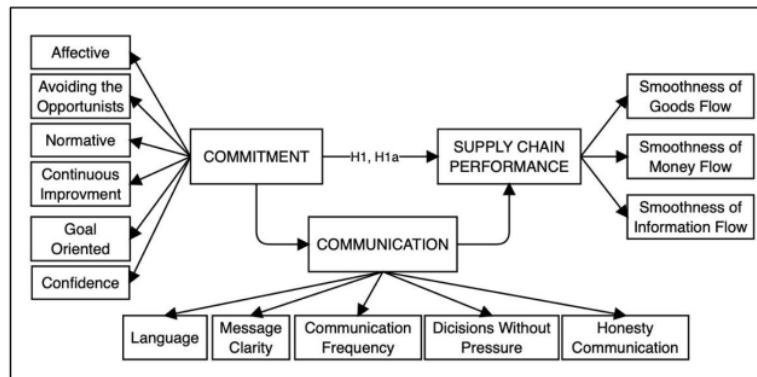
In Bagansiapiapi there are 40 units of bangliau[2]. The *tauke* always maintains good relations with fishermen to ensure the supply of fish to *bangliau*. The *tauke*-fishermen relationship is known as a patron-client relationship. According to [3], *tauke* as a patron acts like a socio-economic institution in the area, namely regulating the process of fish production and distribution, and fishermen's consumption. They lend money without collateral for the cost of fishing. Meanwhile, fishermen (clients) sell their fish, only to the *tauke* (owner of bangliau) at a price determined by the *tauke*.

Patron-client relationships occur on the basis of trust. Trust is defined as an attitude that the needs of one party will be met in the future by the actions of the other party [4], and [5]. Therefore, a person who has believed, will ignore whatever actions the person he has trusted will take [6]. In an economic context, trust is a willingness to take risks, and is dependent on an exchange partner. Trust refers to the extent to which supply chain partners perceive each other as credible and trustworthy partners [7]. Trust is an important factor for a commitment or promise. Commitment is the motivation to maintain and extend the relationship. The higher the commitment built on trust, the higher the quality of the channel relationship between suppliers and distributors of a product or service. Commitment can be measured through indicators consisting of affective, avoiding opportunists, normative, continuous improvement, goal-oriented, and confident [8]. The trust and commitment built by supply chain entities (the parties involved), usually affects the performance of supply chain management (SCM). SCM is an integration of business processes, starting from receiving raw materials, managing each chain of production activities until they are ready for use by users. The supply chain process involves major producers, suppliers, manufacturers, retailers, and consumers. The main objective of any supply chain is to meet consumer needs and generate profits across all entities. SCM, measured by the smoothness of goods flow, money flow, and information flow [9].

Given that information is one of the indicators of SCM, communication is an important factor in the supply chain system. According to [10], communication is the process of exchanging information among participants (people involved in communication), at a certain time, with the aim of equalizing perceptions. Communication indicators include language, message clarity, frequency of communication, decisions without pressure, and honest communication [11]. Communication can have a direct effect on supply chain performance, or simply act as a mediator variable in the effect of commitment on that performance. However, the extent to which communication plays a role in mediating the effect of commitment on marine fish supply chain performance at bungalows in Bagansiapiapi is not known for certain. Therefore this research needs to be done. The conceptual framework for this research is as illustrated in Figure 1. Based on these reasons, two hypotheses were proposed in this study:

H<sub>1</sub> = Commitment has a positive and significant effect on the marine fish supply chain performance

H<sub>1a</sub> = Commitment mediated by communication has a positive and significant effect on the marine fish supply chain performance



**Figure 1.** Research concept framework

## 2. Research Methods

### 2.1 Population and respondents

This research was conducted in December 2020 in Bagansiapiapi, a marine fish distribution centre in Rokan Hilir Regency, Riau Province (see Figure 2). The research subjects were all 40 *bangliau* in the area. Respondents were set at 40 people, namely the owner or manager of *bangliau*. This is done because the population is small (<100). Thus, according to the opinion of [12], the respondent was taken using the census method, which made the entire population as respondents.



**Figure 2.** Map of Bagansiapiapi Regency of Rokan Hilir [13]

### Collecting data methods

Data were collected using closed questionnaires distributed to respondents [14]. There were two types of data collected: primary data, and secondary data. The primary data covers commitment, communication, and supply chain performance. Meanwhile, secondary data was obtained from books and other written documentation published by related institutions/agencies.

### Statistical analysis

The data analysis was carried out in two stages: the instrument testing, and the hypotheses testing. The SPSS (Statistical Package for Social Science) software version 25.0, was used for instrument testing [14]. While the hypotheses testing was used the SEM-PLS (Structural Equation Modeling - Partial Least Square) method with the SmartPLS version 3.2.8 software. The PLS analysis was carried out in two stages, namely the Evaluation of the Measurement Model (External Model), and the Structural Model Evaluation (Inner Model). The external model was used to obtain the validity and reliability of the research construct, while the inner model is used to answer the hypotheses. Hypotheses testing of the bootstrap procedure was used to obtain the t-statistic value for each path relationship. Furthermore, the t-statistic value was compared with the t-table value using a 95% confidence level ( $\alpha = 0.05$ ). If the  $t\text{-statistic} > t\text{-table}$ , the hypothesis is accepted, and vice versa [15].

## 3. Results and Discussion

### 3.1 Statistical analysis

A total of 40 respondents returned the questionnaire (100%), and all questionnaires could be processed data. Furthermore, validity and reliability tests were carried out to ensure all statements in the questionnaire were valid and reliable [15]. The data validity test results shown that there were four not-valid statements in the questionnaire: three statements on the commitment variable, and one statement on the communication variable. These statements are eliminated so that the data can be processed. The validity test results after data eliminated are shown in Table 1.

**Table 1.** Variable validity test results

Variable	Code	Indicator	r-statistic	r-table	Conclusion
Commitment	COMIT1	Affective	0.570	0.312	Valid
	COMIT2	Avoiding opportunists	0.445	0.312	Valid
	COMIT3	Normative	0.353	0.312	Valid
	COMIT4	Continuous improvement	0.596	0.312	Valid
	COMIT5	Goal oriented	0.509	0.312	Valid
	COMIT6	Confidence	0.565	0.312	Valid
Communication	COMUN1	Language	0.626	0.312	Valid
	COMUN2	Clarity of message content	0.778	0.312	Valid
	COMUN3	Communication frequency	0.607	0.312	Valid
	COMUN4	Decision without pressure	0.812	0.312	Valid
	COMUN5	Communication honesty	0.735	0.312	Valid
Supply Chain Performance	SCPER1	Smoothness of goods	0.473	0.312	Valid
	SCPER2	Smoothness of money	0.612	0.312	Valid
	SCPER3	Smoothness of information	0.726	0.312	Valid

**Note:** COMMIT=Commitment; COMMUN=Communication; and SCPER=Supply Chain Performance

Meanwhile, the reliability test results show that the Cronbach Alpha value for the three variables is  $> 0.6$ , as shown in Table 2. According to [14], if the Cronbach Alpha value  $> 0.6$  then the questionnaire used is reliable.

**Table 2.** Variable reliability test results

Variable	Cronbach Alpha		Conclusion
Commitment	0.749	$> 0.6$	Reliable
Communication	0.760	$> 0.6$	Reliable
Supply Chain Performance	0.753	$> 0.6$	Reliable



### 3.2 <sup>4</sup> Evaluation of measurement model (outer model)

The evaluation of the measurement model aims <sup>34</sup> to ensure that each indicator that describes the construct-variable (latent) is valid. The indicator is considered valid if the loading factor value is > 0.70 [16]. The results of the convergent validity test show that the loading factor value of several indicators is <0.70, as shown in Table 3. These indicators must be dropped so that the research model can be used for further analysis.

**Table 3.** Convergen validity test results

Code	Latent Variable (Konstruk)		
	Commitment	Communication	Supply Chain Performance
COMIT1	<b>0.742</b>	0.605	0.434
COMIT2	<b>0.795</b>	0.556	0.628
COMIT3	<b>0.375*</b>	0.312	0.043
COMIT4	<b>0.817</b>	0.695	0.645
COMIT5	<b>0.769</b>	0.628	0.696
COMIT6	<b>0.569*</b>	0.747	0.404
COMUN1	0.569	<b>0.747</b>	0.404
COMUN2	0.680	<b>0.855</b>	0.505
COMUN3	0.439	<b>0.630*</b>	0.507
COMUN4	0.871	<b>0.906</b>	0.669
COMUN5	0.821	<b>0.828</b>	0.573
SCPER1	0.530	0.463	<b>0.852</b>
SCPER2	0.680	0.526	<b>0.889</b>
SCPER3	0.717	0.598	<b>0.851</b>

**Note:** \* Loading factor value of construct < 0.70

Next, the construct reliability test was carried out. A <sup>11</sup> construct is considered reliable if it has Composite Reliability and Cronbach Alpha values are > 0.60, and Avarage Variance Extracted (AVE) values are > 0.50 [15]. The analysis results show that all constructs are reliable because they meet the required standard values, as shown in Table 4.

**Table 4.** Construct reliability test results

Indicator	Commitment	Communication	Supply Chain Performance
Composite reliability	0.886	0.909	0.899
Cronbach Alpha	0.829	0.869	0.831
AVE	0.660	0.714	0.747

### 3.3 <sup>15</sup> Evaluation of structural model (inner model)

Evaluation of the structural model is done by looking at the coefficient of determination ( $R^2$ ), t-statistic, and P-value. The  $R^2$  value is needed to measure how much the dependent variable (endogen construct) can explain the independent variable (exogen construct). The model is declared strong if the  $R^2$  value is 0.75, moderate (0.50), <sup>25</sup> weak (0.25). Meanwhile, t-statistic and P-value were used <sup>33</sup> to test the hypothesis. The hypothesis is accepted if the t-statistic > t-table and P-value > 0.05 [14]. The results of the determination coefficient test show that the  $R^2$  value of commitment and communication, respectively > 0.6 (strong), as shown in Table 5.

**Table 5.** R-square ( $R^2$ ) analysis results

Variable	R-square
Commitment	-
Communication	0.652
Supply Chain Performance	0.623

Table 5 also shows that the commitment variable can explain the variance that occurs in communication by 0.652 or 65.2%. The rest (34.8%) was explained by other factors not included in this model. The commitment and communication variables can explain the variance that occurs in supply chain performance by 0.623 or 62.3%. The rest (37.7%) was explained by other factors not included in this research model.

Furthermore, path coefficient analysis was conducted to measure the magnitude of the direct and indirect effect of the commitment variable on the marine fish supply chain performance through communication. The full analysis of the PLS model produces a structural model output as illustrated in Figure 3.

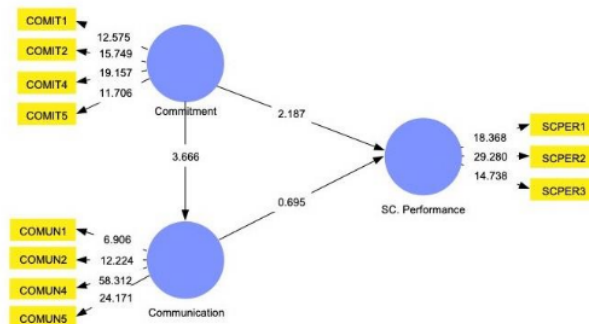
**Figure 3.** Structural model output

Figure 3 shows the statistical value magnitude of the relationship between latent variables. According to [14], if the t-statistic value is  $> 1.960$ , and the P-value is  $< 0.05$ , it means that the latent variable has a positive and significant effect on other variables. The t-statistic value of the commitment to performance is 2.187, and to performance through communication is 3.666. Both values are  $> 1.960$ . This means that commitment has a positive and significant effect on supply chain performance, either directly or through communication mediation. This effect can also be seen from the results of the bootstrap analysis, as shown in Table 6.

**Table 6.** Bootstrap analysis results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-statistics (O/STDEV)	P-value
Commitment $\rightarrow$ Supply Chain Performance	0.365	0.365	0.167	2.187	0.014
Commitment $\rightarrow$ Communication $\rightarrow$ Supply Chain Management	0.670	0.637	0.183	3.666	0.000



Thus, the two hypotheses proposed in this study are accepted, namely: commitment <sup>1</sup> has a positive and significant effect on the marine fish supply chain performance at *bangliau* in Bagansiapiapi (H<sub>1</sub>); and commitment mediated by communication, has a positive and significant effect on the performance of the marine fish supply chain at *bangliau* in Bagansiapiapi (H<sub>1a</sub>).

The study results confirm that the commitments fulfilled by fishermen to take and vice versa, are proven to be able to improve the marine fish supply chain performance. Fishermen fulfil their commitment, namely selling their fish only to the owner (not to others), with the type and amount of fish, as well as the agreed time. The fishermen did that because the *tauke* had lent them money earlier, for the cost of catching fish, for the family's needs. Fishermen do not mind even though the selling price of fish is set by the *tauke*. According to [3], this can happen because there is a patron-client relationship between the *tauke* and the fisherman. On the other hand, the *tauke* fulfills its commitment, buy all the fisherman fish and paying it on time. The *tauke* also lends money to fishermen if he needed it. In addition, if the fishermen's fishing gear is damaged, very easy for them to get a replacement from the *tauke*. The existence of mutual efforts to maintain this commitment, causis communication between the fishermen-*tauke* to go well. For example, fishermen always get information from *tauke* about the fish current price or the fish number needed. On the other hand, the *tauke* also received information from fishermen about the number of fish caught, or the obstacles faced when catching fish. This is in line with the opinion [17], that in marine fish production centres, *tauke* play a very important role in the fish production process.

The smooth supply of fish from the fishermen to the *tauke*, the payment of fish from the *tauke* to the fishermen, and the sharing of information between them, can happen because so far, the communication that has been built between the *tauke* and the fishermen is quite good. The fishermen in Bagansiapiapi are generally Malay, and the *tauke* come from the Chinese ethnic group. However, the 'cross-cultural' communication process between them went smoothly. The fishermen in Bagansiapiapi are generally Malay, and the *tauke* comes from the Chinese ethnic. However, the cross-cultural communication process between them went smoothly. The *tauke* communicates in the Indonesian, even though it is in a Chinese dialect, but fishermen understand some terms in Chinese that are often used by *tauke*. Both parties try to understand each other about the topic they are communicating, so that their perception of the topic becomes the same. According to [18], the purpose of communication is to equalize perception. The existence of good communication between fishermen and the *tauke*, has improved the marine fish supply chain performance to *bangliau*.

### <sup>30</sup> Conclusion

This study concludes that commitment has a positive and significant effect on the fish supply chain performance at *Bangliau* in Bagansiapiapi, both directly and through communication mediation. Communication plays a role in increasing the effect of commitment on marine fish supply chain performance. Therefore, these two factors must be attention for fostering the fishermen in Bagansiapiapi.

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