# Decision-Making Behavior of Traditional Retail in Distribution System: A Conceptual Framework

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## Abstract

The current distribution system is highlighting supply chain resilience concerns in the business competition. Related to it, the Indonesian government prioritized in retail data collection and management of retail distribution systems (traditional and modern) to deal with the business competition. In terms of supply network resilience, the aspects of decision-making behavior will have a significant influence. This study aims to build an initial decision-making framework in traditional retails. This research developed a framework using primary data collection from surveys and interviews and secondary data through literature studies and theories directly related to traditional retails behavior. The framework will represent traditional retails decision-making behavior in pricing strategies, action behavior, retail performance, and distribution selection.

# **1. Introduction**

One of the challenges in Indonesia's economic sector is managing supply network resilience for traditional retailers. The configuration of the economic policies of the retail and market sectors states that there are urgent needs in the structure and data collection of the modern and traditional retail, in the absorption of local products, and the improvement of the distribution system. This condition becomes a big concern of the government and business people, especially for traditional retailers.

The definition of resilience is the ability of the system to react to unexpected disruptions and restore normal supply network operations (Disraelly *et al.* 2003; Christopher and Peck 2004). Under dynamic conditions, the supply chain network is strongly influenced by conditions inside and outside the system all the time. Supply chain resilience studies state that disruption in this concept is an operational part that will affect network resilience (Christopher and Peck 2004; Jüttner *et al.* 2003; Tang 2006; Kovács and Tatham 2009; Zhao *et al.* 2011).

One of the important reasons for measuring supply network resilience is the relationship between network resilience and business competition performance. The concern of the company in the current global competition is the existence of supply chain disruptions, including operational and financial risks (Craighead 2007). According to the results of the Logistics Performance Index measurement issued by the World Bank in 2018, the highlights problem of the current distribution system concerns over the resilience of the supply chain network to maintain business competition.

The problem needs to be concerned about is the distribution system to maintain and improve the performance of traditional retail businesses. Asosiasi Pengusaha Indonesia (APINDO), well known Indonesian businessman association, states that the distribution of stores or retails in Indonesia in 2017 is dominated by traditional retail, which is 82.3%. This data shows that traditional retail is still growing very well in Indonesia. The habit of consumers making small purchases makes them always rely on traditional retailers (Blanco and Fransoo 2013). The dominance of traditional retailers has the potential for weak business competitiveness. Hence, supply network resilience becomes a

valuable tool to get an overview of the competitiveness of traditional retail networks in Indonesia. It indicates the importance of understanding traditional retail behavior in distribution networks.

The problem in managing retail networks in Indonesia is the presence of particular characteristics in traditional retail distribution. Traditional retailers form a supply network on the downstream side to provide goods to end consumers. Traditional retailers make different decisions in terms of ordering and distributor selection decisions. These traditional retail decisions are a form of actual behavior and will affect the supply network model. Fundamentally, the retail sector in developing countries has a different composition, especially in a large number of small retails or traditional shops (Blanco and Fransoo 2013; Boulaksil et al. 2019). The difference in the composition of the supply network makes the product distribution system to consumers more complex and complicated.

Based on the developments and facts about the traditional retail supply network in Indonesia, the behavior of traditional retail decision-making has a significant role in describing the condition of the distribution network. Currently, there is no decision-making framework for traditional retail. Therefore this paper focuses on building traditional retail decision-making frameworks based on data collection in the field and theories related to retail behavior.

# 2. Literature Study

Previous studies illustrate that traditional retail still needs to be explored to maintain its existence. A study in Latin America has examined traditional retail resilience (D'Andrea *et al.* 2006). This study aims to understand the collective success-driven of small scale retailers through consumer ratings of store locations, products, and prices. Other traditional retail studies have defined and characterized nano stores related to strategies in global retail (Blanco and Fransoo 2013). In terms of initial inventory management, Wan *et al.* (2018) have studied the impact of estimated accuracy on optimal initial inventory levels on expected earnings at traditional retail. This research has also involved consumer behavior in it. Meanwhile, a study by Ge J (2017) has examined the behavior of suppliers in supplying traditional retails, especially in stock control, distribution channel strategies, and services on demand.

Modern retail and traditional retail (Table 1) have different characteristics (Kotler 2000; Irawan 2009). Modern retailers have a structured distribution network compared to traditional retail. Meanwhile, traditional retail generally has an uncertain supply. Traditional retail supply sources come from wholesalers, agents, and traditional markets. Traditional retail has individual ownership, so the ability of product order volume is minimal. Traditional retail owners have the freedom to make decisions and strategies for their store management (independent). Therefore the distribution network structure may be different from one traditional retailer to another.

Research on traditional retail explains important facts. Modern retailers already have a significant market share, but the dominance of the numbers is still far from traditional retailers (Blanco and Fransoo 2013). Traditional retailers are small, family-operated retailers located in a densely populated local environment. Traditional retail channels still dominate with many small shops, and this is contrary to general thought. One example is that there are 90 shops per square kilometers, and each store serves about 300 local people in Beijing (Ge J 2017). Therefore, network resilience has an important contribution in determining strategies and policies that are in line with traditional retail conditions in Indonesia.

Traditional retailers have different decision-making behavior, therefore selling from producers to traditional retails is fundamentally different from selling to supermarkets. For example, a recent empirical study Boulaksil *et al.* (2019) with a sample size of 333 stores, conducted in large cities in Morocco, found that nano stores (traditional retail) display a sales chasing ordering behavior (where traditional retail does not track historical sales amount). They simply order based on the quantity sold in the previous week. Sales chasing shows the phenomenon that the level of traditional retail orders is highly correlated with the latest sales quantity.

Financially, most traditional retailers accept cash transactions. Even though they are severely restricted by cash, they still offer credit to consumers who live in the local environment based on trust and relationships. However, due to high risk, suppliers usually do not provide trade credit for traditional retailers, as empirically verified by Boulaksil *et al.* (2019). Operationally, a traditional retail only sells a few hundred Stock Keeping Units (SKUs) to several hundred local consumers.

Suppliers must set prices for their products so that traditional retailers can obtain sufficient profits to cover the subsistence needs of their families (Ge J 2017). It implies a mutually beneficial social relationship between suppliers and traditional retailers. This strength must be able to be utilized to maintain the resistance of traditional retail.

| Characteristics                | Traditional Retail  | Modern Retail   |
|--------------------------------|---|---|
| Forms                          | Mom and Pop Store/ Traditional grocery                    | Department Store/ Mini Market<br>Modern (Convenience) |
| Ownership                      | Independent Store   | Corporate Chain Store                                 |
| Display Product                | Closed-display  | Open-display  |
| Price                          | Flexible  | Fixed priced  |
| Promotion                      | Not Available   | Available   |
| Service                        | Full-service  | Self-service  |
| Goods management<br>technology | Manual  | Information technology-based                          |
| Payment method                 | Cash  | Cash and e-payment                                    |
| Operating flexibility          | Flexible  | Inflexible  |
| Supply network                 | Wholesalers/distributors, agents, and traditional markets | Corporate chain system                                |

Table 1. Characteristics of traditional retail and modern retail.

# **3. Data Collection Method**

In this decision framework development process, this study uses primary and secondary data. Primary data collection was carried out by interview and questionnaire. This data uses 30 traditional retails samples in the area around the Kraton and a small part of the Bantul region, Yogyakarta. In this study, the interviews and surveys aim to collect data needed to characterize traditional retail preferences and behavior in the decision-making process. In particular, this data is also useful for investigating traditional retail decision choices and providing the data needed to estimate the variables required in further behavior models. Some qualitative questions about social problems are required and used for additional data in terms of social interactions and rules of behavior (Pira *et al.* 2017).

Secondary data were obtained from literature from journals, papers, books, and research results. One reference in this study is the behavior model by (Chang *et al.* 2015). The research has typically established the concept of retail behavior, which is restricted to perishable goods. It means that new data is needed to support the development of a traditional retail behavior framework for customer goods.

Traditional retail characteristics become an important factor in decision making. These characteristics can represent stakeholder perceptions (traditional retail) in supplementing a wider distribution system, specifically the distribution network resilience system. Perception-based modelling focuses on how actors think and make decisions (Taniguchi *et al.* 2001). To achieve their goals, actors think strategically, anticipating the goals and movements of other actors in the network. The strategy decided in implementing the system design will influence the outcome, depending on how far an actor can translate the perceptions of other stakeholders in understanding the same system. In this study, the traditional retail perceptions of selecting suppliers are translated through utility values.

## 4. Decision Making Framework for Traditional Retail

This study develops previous concepts regarding retail behavior in perishable products (Chang *et al.* 2015). In the study of Chang *et al.* (2015), retail behavior does not involve aspects of distributor selection, whereas in this study requires aspects of distributor selection.  $Br_i$  is a set of traditional retail processes or behavior in a distribution network. Therefore, the traditional retail behavior of  $r_i$  in this study is defined as  $Br_i = \{bp_{ri}, ba_{ri}, bs_{ri}, bd_{ri}\}$ .  $bp_{ri}$  is the selling price strategy determined by traditional retail  $r_i$ . The action  $ba_{ri}$  is a traditional retail action to carry out a predetermined pricing strategy, while the  $bs_{ri}$  is an occurrence of the retail-consumer sales/transaction process. Next  $bc_{ri}$ , is a process of retail  $r_i$  doing calculations on profits and inventory. After taking action  $bc_{ri}$  agent  $r_i$  doing  $bd_{ri}$  action, namely determining the procurement strategy (Figure 1).

In principle, the traditional retail conceptual model requires attributes, behavior, and decision-making mechanisms as a form of simplification of the process. Attributes will change along with environmental changes in this system. Changes in attributes in this study include pricing strategies, distribution selection, and attributes regarding traditional retail costs and profits, while the learning model and action behavior are forms of execution of pricing strategies and have not been modeled in this paper. Therefore, the behavioral model in this study is limited to the selection of pricing strategies, calculation of costs and profits, and the strategy of selecting distributors as suppliers.

#### 4.1 Pricing strategy

Every traditional retail has the same pricing strategy. Based on retail and distributor interviews, traditional retailers sell goods according to market conditions, and they will provide selling prices that are acceptable to consumers. The price is obtained by adding a profit margin value to the purchase price. The transaction process with consumers is expected to occur with the pricing strategy. From this process, retail will perform performance updates based on the value of profits and inventory. This strategy will determine the final selling price of traditional retailers. According to the interviews of several retailers and sales, traditional retailers use unit-based costing in pricing where ordering costs, holding costs, and purchasing costs per unit of goods contribute to the selling price component. Ordering costs  $Co_{ipt}$  are retail costs associated with ordering some *items*  $Q_{ip}$ . Purchase costs per unit are purchase costs incurred retail to buy goods from distributors per unit  $Cr_{ipt}$ . Holding costs  $C_h$  are costs incurred for storing goods, where the average length of storing Tp for a certain period is  $\frac{Tp}{2}$ . These cost components are added to the target profit margin  $\lambda$ , so that the final sale price per unit of goods is:

$$x_{ip} = \left(\frac{Co_{ipt}}{Q_{ip}} + Cr_{ipt} + Ch\frac{Tp}{2}\right)x(1+\lambda)$$
(1)

where,

i = index of traditional retail, i = 1, 2, ..., NR is a number of traditional retail

p = index of product, p = 0, 1, ..., NP is a number of product

k = index of consumers, k = 1, 2, ..., NK is a number of consumers

$$t = \text{index of time}, t = 1, 2, \dots, T \text{ is cycle time}$$



Figure 1. The decision framework of traditional retail.

#### 4.2 Retail Performance Behavior

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Retail profitability shows traditional retail performance. The profit calculation adjusts the characteristics of a traditional retail business, where the process of determining the selling price depends on its pricing strategy (unit costbased). Mathematically, the model can be modelled as follows:

The maximum total profit = Total Revenue - Total Retail Cost

$$Aax f(Zr_{ipt}) = \sum_{p=1,t=1}^{NP,T} f(INr_{ipt}) - \sum_{p=1,t=1}^{NP,T} f(CSr_{ipt})$$
(2)

where,  $Zr_{ipt}$  is the total profit of retail *i* for product *p* at the time *t*, and  $INr_{ipt}$  is the total revenue of retail *i* for product *p* at the time *t*.

The total revenue  $f(INr_{ipt})$  is influenced by pricing strategy. The total revenue is consumer demand  $Dcr_{ipt}$  multiplied by the selling price  $x_{ip}$  and is denoted as follows:

$$f(INr_{ipt}) = x_{ip} . Dcr_{ipt}$$
(3)

Total Retail Cost  $f(CSr_{ipt})$  is the traditional retail operational costs in the process of procurement of goods. Total retail costs consist of the total cost of ordering products  $Co_{ipt}$ , holding costs *Ch* and purchasing costs  $Cr_{ipt}$ .

$$\left(CSr_{ipt}\right) = \left(\frac{Co_{ipt}}{Qip} + Cr_{ipt} + \frac{C_h}{2}\right) x Dr_{ipt}$$
(4)

where,

$$Dr_{ipt} = Ir_{ipt} - \sum_{k=1}^{NK} a_{ik}.Dcr_{ipt},$$
(5)

*Demand*  $Dr_{ipt}$  is the demand for retail *i* for product *p* which is fulfilled during the period *t*, while  $Ir_{ipt}$  is inventori level of retail *i* for product *p* at the period *t*.  $a_{ik}$  is a transactional relationship between retailer *i* and consumer *k*, where  $a_{ik}$  is variable  $\{0,1\}$ .

#### 4.3 Distributor Selection

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The process of procurement of goods in traditional retail can be divided into two stages, namely the determination of replenishment policies and the selection of distributors. The replenishment policy is determined by the number of orders and the time of the order. In the distributor selection process, traditional retailers use preference values.

Based on the survey, the type of traditional retail behavior in the replenishment process is influenced by financial conditions, the previous week's inventory records, or the number of products seen in the shelf/storefront. Distributors will visit retail regularly, but ordering times will occur based on three possibilities; stock records (10%); or storefront visualization (87%); or based on financial condition (3%) (Figure 2a). In determining the number of orders (Figure 2b), traditional retail has three considerations, namely based on the previous week's sales (37%), or shelf/storefront capacity (10%), or its financial condition (53%). This behavior will affect the amount of demand  $Dr_{ipt}$  of retail *i* for product *p* at the period *t*.



Figure 2. Procurement considerations (time and amount).

Demand  $Dr_{ipt}$  is determined by the retail inventory level in the previous period  $Ir_{ip(t-1)}$ . When a retailer order goods in a condition that still has inventory (based on the calculation of the previous period), it can be stated that the current inventory level exceeds retail demand  $(Ir_{ipt} \ge Dr_{ipt})$ , so that retail demand is as large as the demand  $Dr_{ipt}$  itself. Conversely, if the inventory level is smaller than zero  $(Ir_{ipt} \le 0)$  then retail demand is equal to the maximum  $Q_{ip}$ . It means  $Dr_{ipt}$  can only order as much as  $Q_{ip}$  with a maximum value of inventory level  $Ir_{ipt}$ , formulated as follows:

$$Dr_{ipt} = \{Dr_{ipt}, (Ir_{ip(t-1)} - Dr_{ip(t-1)}) - Dr_{ipt} \ge 0 \ Ir_{ipt}, otherwise$$

$$(6)$$
Where,  $Ir_{ipt} = Q_{ip}$ 

Traditional retail has unstructured financial management, so the financial condition is uncertain. This condition causes the financial disruption aspect  $\theta_i$  in the procurement of goods. In this study  $\theta_i$  is a parameter of financial disruption where the greater the value of  $\theta_i$  the smaller the ability to procure/buy goods from retail, the range of values  $0 \le \theta_i$  $\le I$ . So that the possibility of traditional retail demand with financial disruption will change from equation (7) to :  $Dr_{ipt} = Q_{ip} \cdot (1 - \theta_i)$  (7)

The second possibility is the procurement of a number of items based on shelf/storefront capacity. In this condition, traditional retail uses the number of ordering policies in normal conditions, so the calculation uses equation (7). The third possibility is ordering goods based on the number of sales of the previous period. Retail uses consumer demand  $DCr_{ip(t-1)}$  as  $Q_{ip}$ .

$$Dr_{ipt} = DC_{ip(t-1)} \tag{8}$$

In the process of determining the distributor requires a utility function. The utility function will express traditional retail satisfaction with distributors. Preferences are defined as sets  $P = \{p_1, p_2, p_3, \dots, p_n\}$ , where  $p_i$  is the value of the p index preference to i. In this study, each individual has an attribute score on preferences.

From interviews with traditional distributors and retailers, preferences narrow down to trust relationships, services, and distributor prices. Of these three preferences, there will be 2<sup>3</sup> types of traditional retail preferences, so there are eight possibilities of preference, as shown in Figure 3. "Very good" trust shows personal closeness (such as kinship) between distributor and retail, while "normal" shows a close relationship limited as a seller (distributor) with a buyer (retail) only. "High service" services are additional services offered by distributors, such as the arrangement of goods, and return service for defective products, whereas for "normal service" are services without additional services. In the price preferences, there are two types, namely (normal) market prices and below market prices.

Based on data collection from 30 traditional retailers, the tendency of traditional retail behavior is narrowed to three types as in Table 2.

| Type of traditional retail | Proportion |
|----------------------------|------------|
| Type 1                     | 59%        |
| Type 4                     | 24%        |
| Type 6                     | 17%        |

Table 2. Types and proportions of traditional retail by preference.

There are 59% of traditional retailers (18 out of 30 retailers) have type 1 preferences. This type is a characteristic of traditional retailers who have a preference for "very good" trust relationships - "high service" services - "normal" prices. Based on the results of surveys and interviews, this character explains that the relationship of trust (with distributors) and service has more value than price. According to traditional retailers, this character has an important role in building and maintaining their business models while still providing normal prices on the market. Through trust, disturbances in the procurement process are easier and faster to overcome. This behavior is then translated in the form of a utility function.

It is necessary to calculate the proportional score  $y_i$  of the individual attributes by the evaluation function,  $y_i = \frac{p_i - p_{min}}{p_{max} - p_{min}}$ ,  $y_i \in [0,1]$  and  $p_i$  is the value of the *p* index preference to *i*. From each calculation of  $y_i$  then given a weight of  $\omega_i$ . The formulation is as follows:

$$F = \sum_{i=1}^{n} (\omega_i \cdot U_i) | U_i = f(y_i)$$
(9)

Each traditional retail will have different satisfaction because each traditional retail has a different weighting preference value. Traditional retailers will decide or choose a distributor based on the highest utility value.



Figure 3. Types of traditional retail based on preferences.

## **5.** Conclusion

This study produced a framework for traditional retail behavior in decision-making. Traditional retailers have the same selling price strategy through unit-based costs. In the next process, retailing does the learning process for its operational existence by adjusting price changes that occur over time. From these two processes, transactions between retail and consumers occur in action behavior. Business performance is built using business profitability calculations. The final process is the procurement of goods through distributor selection and replenishment policies.

This research is limited to the concept of behavior based on an initial survey of several traditional retailers. The use of empirical data, more transactional data, and appropriate advanced methods are expected to explain the impact of traditional retail behavior in distribution network systems. In addition, linkages with other stakeholders are still needed for future research.

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