

Disruptive Innovation in Food Commodities: Efforts to Solve the Problems of Food Price Stabilization in Indonesia

N. Istifadah & H. Tjaraka

Universitas Airlangga, Surabaya, Indonesia

ABSTRACT: The factors that determine food prices are supply and demand. On the supply side, food prices are determined by the ability of production and distribution to consumers. However, the ability of distribution also determines the stabilization of food prices. Food commodities are primary needs for human consumption so that their supply must be fulfilled, and access must be reached through efficient distribution channels. The length of the distribution channel will increase marketing costs, which will then be charged to consumers and cause more expensive food prices. In the digital era, innovations are needed in an effort to stabilize food prices, help to create new markets, and develop existing markets (i.e., conventional markets). The technology advancement is expected to produce new distribution channels or disruptive innovations. This paper analyzes patterns of food availability and solves the problem of stabilizing food prices in Indonesia through a disruption innovation strategy.

Keywords: Food, marketing distribution, disruptive innovation.

1 INTRODUCTION

The factors that determine the price are supply and demand. On the supply side, prices are determined by the ability of production and distribution of products to consumers. On the demand side, prices are determined by the number of buyers of the goods. In the case of food commodities in Indonesia, demand tends to increase because an increasing population influences it. On the supply side, production is influenced by the level of productivity, distribution, and weather factors (global warming). Bad weather factors can have an impact on low food supplies due to the threat of crop failure. The ability of distribution also influences food commodities because it will determine the stability of food prices. Finally, efforts to stabilize food prices have become very specific.

Correct and accurate data on the achievement of the amount of food production determines the stabilization policy of food prices because it is related to the certainty of the amount of food production supply in Indonesia. If it is wrong in calculating the certainty of the amount of supply/reserve available, it will result in instability of food prices. This causes an imbalance between food supply and demand.

Maintaining food price stability is the government's role in economic stabilization. In the digital era, innovations are needed in an effort to optimize food prices. Innovations that replace previous technologies help create new markets and develop the existing market. This innovation is called disruptive innovation. This innovation is to develop a product or service in a way that is unexpected in the market, generally by creating different types of consumers in the new market and lowering prices in the old market.

Food commodities are primary needs for minimum human consumption in certain amounts, especially staple foods, so their supply must be sufficient and affordable through efficient distribution channels. Its distribution channels affect marketing costs, which will then be charged to consumers. The longer the marketing distribution channel (supply chain), the more expensive the food prices will be. This paper aims to analyze patterns of food availability and solve the problem of food price stability in Indonesia through a disruption innovation strategy.

1.1 *Food Commodities and Staple Food*

According to the Food Agricultural Organization (FAO), food is anything that comes from biological resources and water, whether processed or unprocessed that is intended as food or drink for human consumption including food additives, food raw materials, and other ingredients used in the process of preparing, processing or manufacturing food and drinks. Whereas according to Indonesian Law on Food No. 18 of 2012, the definition of food is anything that comes from biological sources of agricultural products, plantations, agriculture, fisheries, livestock, water, and water, whether processed or not processed, which are intended for human consumption. Basically, food is all foods and drinks consumed by humans.

The staple food is the most abundant and most often consumed foods compared to other foods. Indonesian people's food consumption is dominated by foods that contain carbohydrates around 70% of the total food consumed. The most consumed food is rice (90%). Staple foods other than rice are corn, cassava, sweet potato, sago, taro, and others, but their demand is still lacking in Indonesia. Besides rice, the increase in staple food consumption is flour (500%) obtained by importing from other countries.

The consumption pattern of staple foods in Indonesia causes an imbalance between the availability and demand for rice consumption in Indonesia. As such, the government must import rice to meet the increasing needs of rice. The government is also diversifying rice substitute food to reduce dependence on rice consumption.

1.2 *Disruptive Innovation*

This disruptive theory of innovation was first created by Harvard professor Clayton M. Christensen in his research on the disk drive industry and later popularized by his book "The Innovator's Dilemma", published in 1997. The disruptive innovation theory explains the phenomenon, where innovation changes the market or existing sectors by introducing simplicity, comfort, convenience, accessibility, and affordability where complications (complexity) and high costs are in the status quo position. Initially, disruptive innovations were formed in niche markets that seem unattractive or inconsequential to industries that already existed (industry incumbents), but eventually, new products or ideas completely redefined the industry.

The definition of disruptive innovation is innovation that helps create new markets, disrupt or damage existing markets, and ultimately replace the pre-

vious technology (Donald & Derek 1987). In general, disruptive innovation intends to develop a product or service in a way that is unpredictable to the market, generally by creating different types of consumers in new markets and lowering prices in conventional markets.

Disruption describes a process where companies with fewer resources are able to challenge established incumbent businesses, particularly because incumbent businesses focus on improving their products and services for their most 'demanding' customers (and usually they are the most profitable customers), so incumbent businesses tend to serve and exceed the needs of some segments, ignoring the needs of other segments (Roger 2000). With disruptive innovation, this neglected segment is then served, and eventually, the conventional market consumers will enter the new market.

The disruptive newcomer business will start targeting the neglected segments by providing more appropriate functionality and often at a lower price. Incumbent businesses, which tend to pursue higher profitability in more-demanding segments, tend not to be interested in responding to it. The new entrants business then targeted the upper class and is able to provide what is needed by the main customers of the incumbent business, while maintaining the benefits derived from the initial success that has been achieved. When the main customers of the incumbent business began to purchase offers made by new entrants in large volumes, disruption had occurred.

It is important to remember that disruption is a positive force. Disruptive innovations are not breakthrough technologies that make products better, but innovations that make products and services more accessible and affordable, making them available to a much larger population.

1.3 *Distribution Channels*

Distribution channels are a series of processes carried out by an interdependent organization involved in the process of making a product or service ready for use or consumption (Kotler 2000). A distribution channel is a route or series of intermediaries, both managed by marketers and independent, in delivering goods from producers to consumers. Tjiptono (2008) and Kotler (2000) explained that the forms of distribution channels used to distribute consumer goods are: first, zero-level channels (direct marketing channels). This marketing channel consists of a producer who directly sells to end consumers. The main methods of direct marketing are door-to-door sales, mail order, telephone marketing, TV sales, and through producers' own shops.

Second, one-level channel. This channel contains a sales intermediary, such as retailers in consumer goods and agents in industrial goods. Third, two-level channel. This channel contains two intermediaries. In the consumer goods market, it is usually a large trader and a retail trader. Whereas in the industrial goods market, they are representatives of producers and industrial distributors. Fourth, three-level channel. This channel contains three intermediaries. In the consumer goods market, they are large traders, builders, and retail traders.



Figure 1. Consumer Goods Marketing Channel, source: Deakin Business School

2 RESEARCH METHODS

This paper used a qualitative analysis method approach using secondary data sources. Through this analysis tool, then analysis with further interpretation by examining food distribution patterns and distribution channels in Indonesia was conducted. From the results of the qualitative analysis, a proposed strategy for controlling food prices in Indonesia was formulated. The following figure is the analysis stage of this paper.

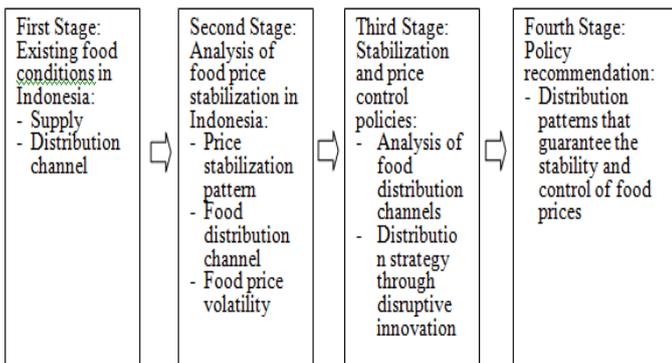


Figure 2. Analysis Stages.

3 RESULTS AND DISCUSSIONS

3.1. Food Availability in Indonesia

Food is the most important basic human need, and its fulfillment is part of human rights guaranteed by the Law of the Republic of Indonesia as a basic component to realize quality human resources. The state must be able to guarantee the availability, affordability, and fulfillment of adequate, safe, high-quality, and nutritionally balanced food consumption, both at national and regional levels, equally in all regions in Indonesia by utilizing local resources, institutions and culture.

Of the various types of food, staple foods are the most numerous and often consumed, among other types of food. Staple foods are foods that are basic nutrients and usually do not provide all the nutrients the body needs.

Therefore staple foods usually have to be supplemented with side dishes to meet nutritional needs and prevent malnutrition. Each region in Indonesia has different types of staple foods according to local conditions and culture. Usually, staple foods come from plants, such as rice, wheat, corn, and tubers (such as potatoes, sweet potatoes, taro, and cassava). Of the various types of food, rice is a food commodity consumed by most of the population in Indonesia.

The Indonesian people's habit of consuming rice as a staple food makes it difficult to consume other food, so the effort to diversify food other than rice is not an easy challenge. In other words, the Indonesian population is very dependent on rice food commodities. Then, changes in life patterns began to occur, which led to a shift in staple food consumption patterns in Indonesia. Previously, the population began to switch from rice to bread, so that the supply and consumption of rice declined, but wheat and wheat flour demand increased.

Several factors from upstream to downstream influence food availability in Indonesia. Upstream problems include limited land, conversion of agricultural land, number of workers in the agriculture-fisheries-and livestock sector (shift in the agricultural sector to industry), technology level, farmers' welfare, high production costs, and quality of human resources in the agricultural sector which is still lacking. Meanwhile, downstream problems include high transportation costs for transporting crops, logistics systems, and storage warehouses, and infrastructure investment in the agricultural sector. The unavailability of infrastructure in the agricultural sector dramatically influences the logistics costs and competitiveness of domestic foods (towards import-

ed food). Types of infrastructure related to food include road access or transportation, irrigation, logistics systems, and warehouses.

The Food Material Balance (FMB) can be used to analyze the balance between food supply and use. The FMB is a table that provides an overview of the availability of food for consumption by residents of a region/country/province/district within a specified period. It provides information on the availability/supply of food, both originating from domestic production, import-export, and stock, as well as the use of food for the needs of feed, seeds, use for industry, as well as information on food availability for population consumption. See Table 1 below.

Table 1. Supply, Utilization and Per Capita Availability of Rice in Indonesia, 2014-2018 (in 000 ton)

Items	2014	2015	2016	2017	2018
Supply (000 Ton)	42,678	45,222	32,288	33,206	33,804
Production					
-Input	66,031	70,296	50,060	51,219	52,427
-Output	41,428	44,104	31,408	32,135	32,893
Import	843	860	1,281	304	2,374
Export	2	1	1	4	5
Change in Stocks					
Utilization (000 Ton)	70,848	75,399	54,032	55,255	56,538
Feed	41,491	43,949	31,292	32,155	32,708
Seed (Bibit dll)	29,357	31,450	22,740	23,100	23,830
Per Capita Availability (Kg/Capita/Year)	164.58	172.04	121.05	123.03	123.82

Source: Center for Agricultural Data and Information System, 2018.

3.2. Disruptive Innovations as Efforts to Solve Food Price Stability Problems in Indonesia

Price stabilization or inflation in Indonesia is volatile. In 2018, the national inflation rate was 3.13%, around 40% of it or 1.21% was contributed by food, especially rice. Food is the most significant contributor to inflation in Indonesia, including rice, sugar, salt, onions, meat, chilies, etc. See Figure 3 on the following page.

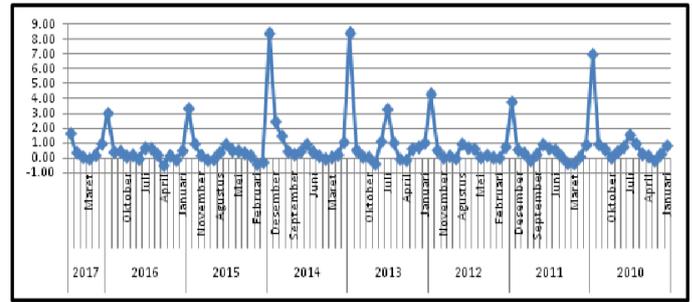


Figure 3. Inflation level in Indonesia, 2010-2018 (%), source: Central Bureau of Statistics, 2018.

One of the causes of volatility in food commodity prices is due to an imbalance between supply and demand in the market. This condition is caused by the high demand for food that can not be matched by the supply available in the market. The cause of the lack of food supply in the market can be caused by various kinds of problems, such as inadequate food production results due to food production systems and limited production capacity. The influence of climate change can also disrupt food production, as well as distribution chain issues due to monopolistic behavior and unfair business competition. Some of the causes of imbalance supply will bring consequences on the adoption of different food commodity price control policies, such as import policies, food production subsidies, food production engineering, staple food logistics stock management, and so forth.

Food problems often occur due to conditions of lack, excess, and or inability of individuals or households to meet the needs and safety of food for their families. This relates to the availability, distribution, and ability of people to access food for their consumption needs.

Food availability is related to the capacity of food production and the ability of people to access food. Both are greatly influenced by the success of food distribution or food circulation, which is a series of activities in the context of food distribution to the public, whether traded or not. The government must be able to increase access to food for the people, especially for people who are experiencing food and nutrition insecurity.

In the food distribution channel that has been occurring so far, suppliers and consumers of food meet in conventional markets, so prices are determined by the amount of food supply from production sources to conventional markets. However, in the digital technology era, the distribution of food supplies no longer needs to flow in conventional markets, but from sources of production can directly flow to the final consumers. The online food commodity market has become one form of disruptive innovation,

which will not only create new markets but is also expected to be able to stabilize food prices.

The characteristic of this disruptive innovation is that newcomer businesses target consumers who have been served by many existing products (saturated markets), their products/services are easier to use, more convenient, or more affordable. Newcomer businesses utilize technology as a driver that can increase new value propositions to the upper classes. The technology is utilized through business model innovations that make it sustainable, where incumbent business tends to ignore these innovations and feel not threatened at first.

Food distribution channels that have been practiced by incumbent businesses, namely normal distribution (through conventional markets) tend to be less efficient and have the potential to have an impact on food price stabilization. By using digital or online (e-commerce) marketing methods, distribution channels are shorter, so food supplies will be more sustainable. Online marketing through digital technology is able to reach consumers at any time and any place. Therefore, the distribution channels that bring together consumers and producers become shorter, and the gap problem between food availability and food needs is resolved.

4. CONCLUSION

In general, high food demand due to increasing population triggers fluctuations in food prices. However, the supply-side problem leads to food price instability. The availability of supply due to food distribution is often the leading cause of the problem of food price instability.

Therefore, policies and strategies are needed to solve the problem of food price stabilization, especially those caused by distribution channel problems. Food distribution channels are still considered too long. Efforts to shorten the meeting path between food availability and consumer needs must be made through a distribution channel (marketing network) that is shorter and more efficient. Technology is able to shorten distribution channels from suppliers to consumers. Technology-based marketing (e-commerce) is one alternative to shorten the food distribution channel in Indonesia. The government should provide facilities and instruments so that food supplier can enter e-commerce marketing channels and makes distribution channels shorter (both time and space dimensions), which eventually leads to food price stability.

REFERENCES

- Donald, A.H. & Derek J.M. 1987. *Industrial Economics, Theory and Evidence*. USA: Oxford University Press.
- Kotler, P. 2000. *Marketing Management. The Millenium Edition, International Edition*. New Jersey: Prentice Hall, Inc.
- Roger, H. 2000. *The Dynamics of Industrial Location*. England: John Wiley & Sons.
- Tjiptono, F. 1997. *Strategi Pemasaran, Edisi II*. Yogyakarta.
- William, G.S. 1990. *The Economics of Industrial Organization*, USA: Prentice-Hall International, Inc.