RISK IDENTIFICATION OF SMALL MEDIUM ENTERPRISES IN INDONESIAN SEAFOOD INDUSTRIES

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Abstract

Indonesia is considered as one of the most disaster-prone countries as it stands along the equator between the continents of Asia and Australia. This condition catalyzes a range of natural and climatic hazards. The Covid-19 outbreak is the latest calamity exposing most of nations in the world including Indonesia which have impacting severe effects in socio economic sectors. Fishery product industries, as Indonesia is the world’s largest archipelagic state producing huge number of fishery product each year, are also affected by the covid-19 disaster. Small medium enterprises (SMEs) involved in this sector are affected on both the demand and the supply side and given high risk of hydro-meteorological hazard as well as physical and chemical risk from the material. Identification of possible risks in SMEs’ business is truly needed to anticipate those impact occurred in the future. The aim of this study is to propose conceptual framework about risks identification and how seafood SMEs overcome those effects in Indonesia. The study is based on current literature which focused on disaster mitigation, SMEs performance measurement and risk management involved in fishery products. As a result, some factors are proposed for policy making to develop mitigation capability of seafood SMEs in Indonesia.

Keywords: Covid-19, hazard, policy, risk management

INTRODUCTION

Indonesia is a country located in South-East Asia, lying between the Indian Ocean and the Pacific Ocean. It lies between the Asian and Australian continent. This archipelagic country is situated on the equator which tend to have tropical climate. Additionally, Nusantara considered has tectonic and volcanic activities, experience multiple hazards such as, volcano eruptions, earthquakes, floods, tsunamis, forest-fires, landslides and droughts [1]. Meanwhile, the Covid-19 outbreak has affected most of nations including Indonesia which have impacting severe effects in many sectors. For instance, Covid-19 spreads a negative supply shock and economically reduced. First, many workers get infected this phenomenal disease, reducing production capacity. Second, local authorities in several regions have enacted large-scale social restrictions to suppress the number of cases. This policy has tremendously resulted some businesses to close their operations.

Eventually, these would lead to a demand shock. In countries with incomplete markets and liquidity constrained consumers, the initial supply shock could lead to amplified demand shocks [2].

Indonesia is the world’s largest archipelagic state and also has some of the world's richest fishing grounds included in world's fourth largest producer of fish after China, Peru and India [3]. The seafood sector constitutes an important pillar of the Indonesian economy through export revenues, income generation, and employment.

During Covid-19 outbreak, Its seafood processing business are also impacted. The closure of restaurants and hotels as well as social restrictions in export destination countries resulted in a decreasing demand for seafood commodities. In supply side,
fishermen in some areas cannot catch fish which could lead disruption of seafood production [4]. COVID-19 is not the sole disruption. In the future, there will be many disruptions and other crises, including the global threat of climate change, such as sea-level rise up to 0.46 meters which could result in the loss of islands and coastal communities' place of residence and degradation of coral reefs by up to 99% which could result in the loss of fish habitat and tourist attractions, threatening food security and the livelihood of coastal communities [4].

SMEs plays an important role in Indonesian economy, but with their limitations, SMEs are very vulnerable to risks arising from disasters and also their business activities. Therefore, SMEs in the seafood processing sector with specific raw material characteristics compared to agricultural commodities, must have the ability to mitigate disasters in order that they are able to survive in business competition. The aim of this study is to propose conceptual framework about factors influencing disaster mitigation capability of fishery product SMEs toward natural and social risk in Indonesia.

**METHOD**

Literature driven approaches can provide a good descriptive overview of existing findings. The risk of missing out on systematic gaps in the field could be alleviated by analytical reasoning about the types of categories that can be logically observed in the first place [5]. In the first stage, we focused on conceptualizing general idea about disaster mitigation and risk management. Disasters are no longer viewed as extreme events created entirely by natural forces but as unmanaged risks (physical, social, and economic) for a long time. Approaches from relief and response shifting to risk management has begun to influence disaster management programs [6]. On the next step, this paper specifies the target of disaster mitigation is SMEs as business units which support the economy in Indonesia. Several literatures have discussed disaster mitigation of community groups in certain areas or locations, but there is still a gap discussed specifically about how SMEs as a profit organization carry out disaster mitigation. This paper aims to address that gap.

The questions for this paper are as follows.

RQ1. What does literature on disaster mitigation reveal about hazard threatening sea and coastal area in Indonesia?
RQ2. What does literature on disaster mitigation reveal about factors considered to loss reduction?
RQ3. What does literature on seafood industry reveal about various type of risk on its chain?
RQ4. What does literature on risk management reveal about SMEs’ risk measurement?

Third, this paper construct a conceptual framework which consist of several factors abstracted from previous studies and findings which describe clearly about relation among the factors to form capability of SMEs to mitigate possible risk in the future specifically in seafood processing industry.

**RESULTS AND DISCUSSION**

1. **Disaster Risk of Sea and Coastal Area in Indonesia**

Natural disasters are becoming more frequent, deadly and costly (United Nations International Strategy for Disaster Reduction (UNISDR, 2011)). Globally, the frequency and magnitude of weather and climate-related hazards is increasing, flood as the most frequent disaster and affected most people [7]. Hydro-meteorological hazards (floods, typhoons, droughts, etc) are the most frequent examples and affect the greatest number of people, whilst geophysical hazards have caused the most deaths in Indonesia.

Located between the tectonic plates of Asia and Australia, the country lies in a zone of high tectonic activity which frequently results in earthquakes and
tsunami. Row of mountains and active volcanoes spread across the island and beneath the sea. Volcanic eruptions, tsunami and earthquakes are the deadliest hazards in Indonesia.

Besides natural disaster potential in Indonesia, there are some risks comes from social phenomenon, such as urbanization which threat the livelihood of citizens. Indonesia is the fourth most popular country in the world which 12% people who live below the poverty line and 40% of population are still vulnerable to falling into poverty.

Coastal area in Indonesia which are prone to various types of hazards due to sea level rise, changing rainfall patterns, and rising temperatures have high risk for social vulnerability [8].

2. Loss Reduction Factors in Disaster Mitigation

We need to state clearly about basic terminology of mitigation before we shift to the factors affecting that. Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. Disaster mitigation is one of approach to decrease the risk of disaster. The mechanism of disaster mitigation can be done before the disaster happens by developing the disaster-resistant building or gaining the awareness and the enhancement of people's ability in facing the disaster [9]. Specifically, disaster mitigation focus on ongoing structural and nonstructural measures undertaken to limit the adverse impact of natural hazards, environmental degradation, and technological hazards [10]. Mitigation is largely a developmental activity, which, through sustained initiatives, minimizes the likelihood of a disastrous occurrence by reducing either the intensity of external threats (hazards) or the vulnerability of those at risk.

Moreover, mitigation has often divided into two categories: “project” and “process” mitigation. Project mitigation involves building things that resist natural forces. Process mitigation involves using policy tools to alter the behavior of actors in the process [11]. Then, we will focus on process mitigation as it has closer meaning with intangible assets for SMEs.

We have already heard that vulnerability studies mostly examine the source of biophysical or technological hazards (vulnerability as a pre-existing condition) or focus on coping responses, societal resistance, and resilience to hazards (vulnerability as a tempered response). Weichselgartner and Bertens (2000) have proposed a concept which combines elements of the two, thus both geographic and social space are seized. Vulnerability is conceived as biophysical, technical, and social vulnerability [12].

Disaster risk reduction requires continuous action consisting of many factors [13]. From the two literatures ([12] and [13]), we can conclude that several factors are relevant for loss reduction. The first factor is preparedness. Preparedness is precautionary activities to provide effective response to hazard events including timely and effective early warnings and the temporary removal of people and property from a threatening location. The second is prevention which is conducted immediately before hazard event to reduce negative impacts. The next, response is the provision of assistance and/or intervention during or immediately after a disaster. The actions needed for long term effect after disaster happened is recovery. For encouraging and facilitating adjustments to reduce disaster risk, recovery is intended after a disaster with a view to restoring living conditions of the stricken community.

1. Risk on Seafood Processing Industry

In supply chain of seafood industry, there are some risks which could lead to expose to consumer. Seafood fraud or knowingly as misslabeling species name is
one of fraud activities which put consumers at risk of negative health impacts such as allergies. DNA testing is a good way to confirm species claims of product [14]. Climate change was perceived as a strong driver for supply side in the seafood industry, but was not the sole driver of change [15].

![Disaster Loss Reduction Factors](image)

**Figure 1. Disaster Loss Reduction Factors [12]**

The other risks come from business and production activity in seafood processing industry is occupational allergy and asthma. The adverse reactions associated with seafood could be a toxic or non-toxic individual reaction that may be due to an allergy or intolerance to an additive or contaminant of seafood. In seafood exposed individuals, both allergic and irritant reactions have been observed [16].

Financial risk is one of risk from seafood production since there are number of sustainability challenges, including over exploitation of resources; habitat destruction; illegal, unreported, and unregulated (IUU) fishing; limited transparency; overuse of antibiotics; and forced labor [17].

In the activities of food especially seafood processing, the term of hazard refers to any agent in, or condition of, food that is unacceptable because of its potential to cause an adverse health effect. These hazards might be caused by biological, chemical, or physical contamination in raw materials or semifinished or finished products. The problems that might occur in the food industry are due to several factors such as the low quality of raw food, packaging and other materials used in the food process; inappropriate methods adopted in the food production, i.e., table measurement systems; inadequate equipment; and/or unacceptable environmental conditions (contaminated or polluted environment). For preventing those kind of hazards, there is a international standard system which is called HACCP (Hazard Analysis Critical Control Point) which is a seven-step procedure that aims to assure the food safety of products; enables the industry to establish a two-way relationship with consumers, which eventually contributes to the improvement of food quality; and deals with legislative problems related to the internal quality standards of a firm [18].

### 2. Risk Management on SMEs

According to [19] most frequent types of risks in SMEs from the literature as mentioned:

a. **Interest Rate Risk**
   
   SMEs are being highly dependent on external finance and a loan as the main source of financing available. This involves the risk that interest rate on the loan may change.

b. **Raw material prices risk**
   
   The volatility of raw material prices in agriculture, fisheries and on energy markets has confronted SMEs with new challenge.

c. **E-business and technological risk**
   
   Software implementation requires high level of commitment in SMEs. SMEs are exposed to a variety of online threats, such as identity theft, email abuse and cyber-attacks because of limited resources and knowledge.

d. **Supply chain risk**
   
   Dependency of focal point to their supplier has lead manufacture because they sell various types of
products. Additionally, SMEs are tending to find bigger market and lead them to create more complex supply chain networks.

e. Growth risk
Since the market is highly unpredictable, SMEs might encounter growing operational cost. This condition probably caused by lack of knowledge to yield effective business strategy which responsible to managers/owners.

![Figure 2](image)

**Figure 2. Proposed framework of SMEs capability in disaster mitigation**

Figure 2 depicts three aspects in order to increase capability for local seafood industries. One factor is preparedness for natural disaster which means how the small medium enterprises run their business before the calamity occur. Meanwhile, the second factor is responsiveness for changing market because it is greatly unpredictable during the pandemic and technology is the factor to be considered particularly for delivering SME’s product to end customers efficiently. For example, capability of SMEs to split their business in internet marketing to response the changing market. Last aspect is fully understanding of Hazard Analysis Critical Control Point (HACCP) is important as to prevent biological, chemical and physical hazard during transferring raw material to finished good product.

There are several factors that essential to be prepared for SMEs to encounter various possible risk in seafood industry. First, fully understanding of occupation regulation is important, considering the impact to the organization in reducing work injuries. Occupational regulation is defined as standard of qualification requirements which generally applied for specialized job [20]. This is mainly having significance effect of yielding better productivity. Moreover, occupational regulations have been implemented in many enterprises with the involvement of government through their policies which rules certain qualifications. In general, there are four legal regulations in order to meet certain qualifications, encompass: licensing, registration, certification and accreditation. Those types usually needed for industries to ensure that their product/service are standardized.
Similarly, SMEs must preserve their product quality by implementing legal regulations both in human capital and raw materials.

Secondly, there is “local knowledge” as a main foundation of disaster risk reduction used to explain a basic factor which initiate the capability of risk assessment [13]. Local knowledge refers to knowledge often gained through experiences [13]. Indigenous knowledge has the potential for contributing more in disaster risk reduction, although it cannot be the only one solution for improving risk reduction [21]. The scope of local knowledge in the seafood industry include fishing and catching method (example: Sasi Laut in Maluku) [22], fishing management (example: Panglima Laot in Aceh) [23], traditional fish processing (example: smoked mackerel tuna called Jangkar in Situbondo, east java province) [24]. Moreover, risk of contamination also can occur along seafood chain from marine or aquaculture to table. There are several potential hazards that have been found in seafood, including pathogens, marine toxins, environmental pollutants, and heavy metals [25]. When seafood is properly handled and cooked, the risk of foodborne illness from pathogens or parasites is minimal. To encounter the hazards, producers should understand about scientific knowledge to prevent the hazard. Hence, scientific knowledge and technology transfer is needed from large enterprises and scholars to SMEs for ensuring fish processing safer [26]. For better result, social networks and learning processes are involved during knowledge transfer especially for food safety management system training and implementation [27].

One of the biggest problems faced by SMEs in the most developing countries is lack of access to financial services. Small and medium enterprises need accessibility to expand their business. The character of financial risk in SMEs come along with an increase in profits, there is an increase in the risk of losses [28]. To improve financial accessibility of SME, some assistances are needed from financial institution for SMEs to improve their capacity building [29]. Furthermore, due to Covid-19 outbreak, banks have tightened their lending practices in recent years and are more cautious about lending to businesses that have been significantly affected by the pandemic. Government funding including subsidies and investments is one of possible solution to increase the development of small and medium-sized businesses [30].

The advancement of technology has evolved and cause the emerging of Industry 4.0 particularly in industries. This revolution has greatly impacted the development of digital marketing since it was used in 1990s. Many popular ecommerce platforms are competing to gain market share throughout the world. Therefore, business strategies in some industries are now shifting from traditional to digital regarding their potential customers behave to search their need through internet. Meanwhile, over 199 million internet users in Indonesia as it stood approximately at 68% of online penetration [31]. For industries, this is a potential market in promoting their products through online by practicing artificial intelligent, B2B marketing, digital content management and mobile marketing as it proposed by expertise [32].

In line with previous idea, customer behavior has changed tremendously in response rapid technological innovation of hand-held devices which lead to how they react ecommerce and social media. Mobile apps, electronic wallet, online store channels are now embedding in consumer daily shopping activities as the positive result of digital technologies. For instance, millennials generation are familiar with digital media usage through mobile phone as it common tools for them. These generations are strongly connected with
fellows and talkative about brands. Due to their capability to give some feedbacks from product that they purchase, firms are eagerly embrace them to promote their product through digital marketplace [33].

As it stated previously, the development of digital marketplace has many benefits for industries such as SMEs. It helps small industries to reach enormous customers effectively and creating a bond with their potential buyers. In addition, reaching global market is potentially successful in expand SMEs business so they can earn optimum profit. Another good point of implementing digital marketing is to earn customer loyalty by having online presence. As for an example, souvenir maker has website to promote its products with photo galleries in order to attract visitors and customer service through live chat. These strategies help seller to get interact with consumer and create a trust between them. Moreover, understanding the concept of Search Engine Optimization (SEO) also considerably important to make product content standardized in search engine.

To sum up, utilizing internet to marketing SMEs products is paramount considering many beneficial impacts for organization’s growth. However, universities through society empowerment need to lend their hand in helping SMEs grow their business.

CONCLUSION

There are some essential factors to be considered for small and medium seafood industries in respond to Covid-19 outbreak. One of those is better understanding of occupational regulation. Secondly, well prepared from hazard yielded by natural disaster. Next, full support from government of financial access for small enterprises to grow their business. Lastly, adapt with rapid changing of technology also crucial for a better production line system as well as marketing strategies through ecommerce platforms. Despite those requirements, scholars are needed to educate and enlighten small business parties to share their knowledge and implement them to the field. However, this research still need some broader analysis of how fisheries processing SMEs to forecast volatility of stock and demand due to economic uncertainty. Further observation of the role of stakeholders such as local government also required.

REFERENCES


