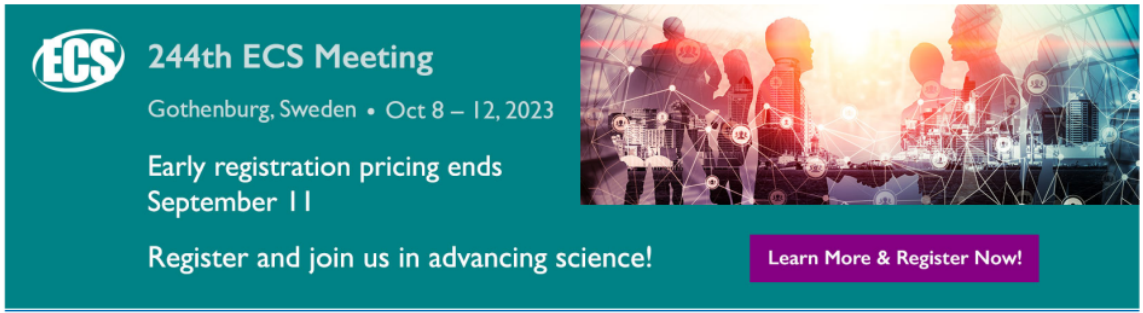
Indriati_2023_IOP_Conf._Ser.__Earth_Environ._Sci._1168_012045

by @ Turnitin

Submission date: 09-Sep-2023 02:15AM (UTC+0700)
Submission ID: 2160975251
File name: ndriati_2023_IOP_Conf._Ser.__Earth_Environ._Sci._1168_012045.pdf (715.18K)
Word count: 2980
Character count: 15695

Knowledge of Subang salted fish sellers and prevention strategies for formalin abuse in salted fish



Knowledge of Subang salted fish sellers and prevention strategies for formalin abuse in salted fish

Ashri Indriati[1*], Nur Kartika Indah Mayasti[1], Novita Dwi Susanti[1], Devry Pramesti Putri[1], Lista Eka Yulianti[1], Cahya Edi Wahyu Anggara[1], Laila Rahmawati[2], and Liza Nora[3]

[1]Research Center for Appropriate Technology, National Research and Innovation Agency, Subang, West Java, Indonesia
[2]Research Center for Food Technology and Processing, National Research and Innovation Agency, Yogyakarta, Indonesia
[3]Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Jakarta, Indonesia

[*]ashriindriati@gmail.com

Abstract. Fish is a perishable commodity. Producers can process fish into salted fish to make it more durable, but producers still add harmful food additives to increase the product's shelf life. The government prohibits the use of formalin as a food additive. This study aimed to identify salted fish traders' knowledge of formalin abuse and obtain a strategy to minimize formalin abuse in salted fish. The research method was carried out by giving questionnaires, interviews and using the Strategic Assumption Surfacing and Testing (SAST) method. The results showed that the seller's knowledge was still low regarding the salted fish products sold, food additives, food product preservation, the lack of socialization about food safety, and the characteristics of formalin products. The chosen strategy is based on the level of importance and the level of certainty to minimize the misuse of formalin, namely socialization to sellers and buyers regarding formalin, the dangers and how to use it and the manufacture of portable detection kits/tools that are easy to use and accurate results.

1. Introduction

Indonesia is a maritime country that has abundant fishery resources. Fishery resources are included in foodstuffs that are easily damaged and quickly experience a deterioration in quality (perishable food). The main component in fishery products is water and usually around 80% of the weight of fresh raw materials, thus causing the material to be easily damaged due to microbiological activity if not handled immediately. In addition, fishery products' protein and fat content is unstable and easily damaged during storage and processing. The protein content is closely related to temperature changes that cause the protein to be denatured. In contrast, fat content is related to high unsaturated fatty acid content, so improper storage and handling conditions can make the fish product oxidized and cause unpleasant odors and flavors and will turn rancid. Therefore, preservation technology is needed so that the product has a preferred taste, aroma, or flavor and has a longer shelf life that is safe and of good quality [1].

To avoid spoilage in fishery products, salting and drying products can be carried out with the principle of attracting water to the fish meat tissue so that the protein clumps and the meat cells shrink (protein denaturation) so that microorganisms cannot develop [2]. Salting is one effort that is quite easy

to save fishery products. Salting and drying products produce salted fish, which is widely consumed by the public because it is affordable, durable, easy to obtain, has good nutritional content, and has a distinctive aroma [3]. In practice, although salted fish can be stored longer than fresh fish, many salted fish producers still add food additives in the form of formalin to increase the shelf life of salted fish.

Formalin is one of the additives that are prohibited in food. Formalin is often found in foods such as wet noodles, salted fish, tofu, meatballs, and others. The addition of formalin is not recommended because it can cause poisoning [4]. Regulation of the Minister of Health of the Republic of Indonesia Number 1168/Menkes/PER/X/1999 states that formalin is a preservative that is prohibited from being used as a food preservative because it can cause damage to the digestive tract, kidneys, liver, and lungs, and can even cause cancer [5].

Several cases of formalin use in salted fish have been found in previous studies. Nawar identified formalin in salted fish traded in the Makassar Daya market and found that 2 out of 8 samples of salted fish traded in the Daya Market contained formalin [6]. Another study was conducted in the traditional market of Jambi city. The results obtained from 25 samples analyzed obtained that the levels of formalin in each market varied with the highest value in the mama market and all samples of salted fish of the type of stone head circulating in the traditional markets of Jambi City contained formalin [7].

Another study showed that 24% of salted fish circulating in the Bandung City Simple Market were positive for formalin. The group that contains the most formaldehyde is salted fish [5]. The use of formalin was found in the traditional markets of Pontianak City and in salted fish obtained at markets X and Y in Sukabumi [8,9]. In contrast to the research conducted by Tarumingi et al., which identified formalin content in salted fish in several traditional markets in Manado city, the results of 14 salted fish samples did not contain formalin [4].

This study aimed to identify salted fish traders' knowledge of formalin abuse and obtain a strategy to minimize formalin abuse in salted fish.

2. Research Methods

2.1. Respondent characteristics

The research, conducted from March to October 2022, involved salted fish sellers and experts from practitioners and academics. The first respondents are salted fish traders in traditional Subang City markets. Selection of respondents selling salted fish in Subang because Subang is one of the producers of marine fish in West Java [10], so the potential for preserving fish is greater. They selected as many as seven sellers who were taken using a purposive sampling technique.

The next respondents are experts, as many as 24 people who come from researchers from the national innovation research agency, academics (lecturers), the Department of Cooperatives, MSMEs, trade and industry, health department, and the Subang KUMKM Integrated Business Service Center.

2.2. Data collection method

The data used in this study are primary data and secondary data. Primary data were obtained through interviews, questionnaires, and expert surveys. Questions given to salted fish sellers include the types of salted fish sold, salted fish producers, salted fish storage time, seller's knowledge of salty fish products sold related to the production stage, materials used, seller's knowledge of food additives, use of formalin in food, and related regulations. Secondary data obtained by literature studies related to research-related materials

Table 1. Data Collection Method

Data Type	Method	Data Source
Salted fish seller's knowledge of formalin abuse	Interview, questionnaire	Respondents selling salted fish
Preventive strategies for formalin abuse in salted fish sellers	*Strategic Assumption Surfacing and Testing* (SAST).	Expert respondents

2.3. Research process

The research process is carried out as in Figure 1.

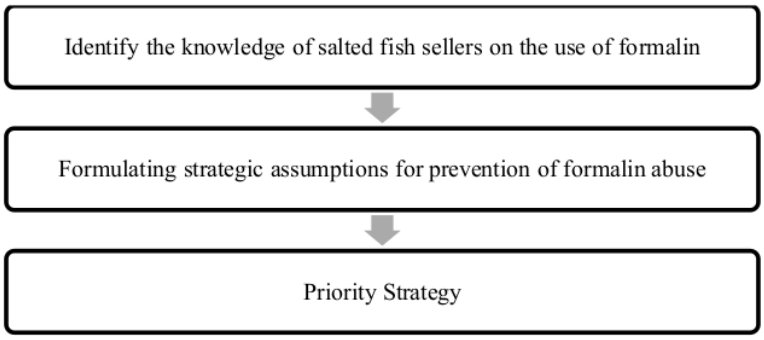


Figure 1. Research process

The study begins by identifying the knowledge of salted fish traders on the use of formalin. At this stage, information was extracted from salted fish traders starting from the type of salted fish sold, the process of obtaining salted fish, trade turnover, knowledge of traders about food additives, and knowledge of traders about formalin and formalin abuse. Research conducted by Widayanti and Laksmita stated that there was a significant relationship between the seller's level of knowledge and the identification of formalin in salted fish products sold [11].

After obtaining an overview of the knowledge of salted fish traders on formalin, the research continued with the formulation of strategic assumptions. The method used is Strategic Assumption Surfacing and Testing (SAST). SAST is one of the methods used to identify strategic assumptions about things that need to be considered in designing a strategic policy or plan [12,13]. According to Eriyatno and Fadjar, the steps taken at this stage are as follows [14]:

1. Create an expert group. Each expert comes from parties with different perspectives and knowledge of the problems at hand. This is done so that the strategy taken is more optimal. The considerations and criteria for determining expert respondents were taken based on: the presence of respondents, affordability and willingness to be interviewed; reputation, position, and demonstrated credibility as an expert; as well as personal experience so that the person can give the right advice and help solve the problem [15].
2. Collecting several strategic assumptions from each expert based on the initial identification of the salted fish seller's knowledge of the use of formalin.
3. The dialectical phase is carried out to determine the relevant assumptions, then weighting the assumptions based on the impact of the assumptions on the results and strategies chosen and applied (level of importance) and the truth of the assumptions as "self-evidence" (level of certainty). The level of importance and level of certainty of these assumptions. Assumptions with the weights obtained are then described in the Cartesian quadrant (Figure 2).

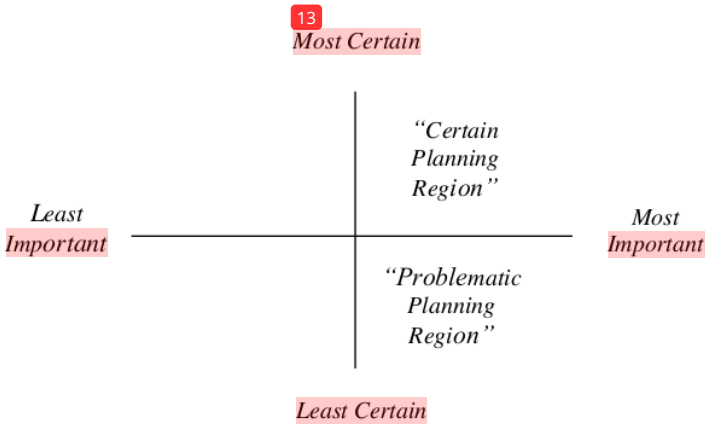


Figure 2. Assumption rating

4. Integrate each assumption so alternative strategies are obtained to minimize formalin abuse in the salted fish business.

3. Results and Discussion

3.1. Identification of salted fish seller

The questionnaires and interviews show that respondents who sell salted fish do not know the products they sell. 87% of respondents are unaware of any regulations related to the salted fish business. Salted fish sellers only sell and do not produce salted fish. The seller obtains salted fish products from Subang distributors and outside Subang. The storage time for salted fish purchased from distributors is 1-14 days, with an average purchase of 10 kg per type of salted fish. Not all sellers know the process and content of salted fish products. In addition, salted fish sellers do not know that salted fish are sold using preservatives or dyes, and they are not sure whether the salted fish sold contains formalin.

The seller's knowledge is also very minimal about food additives. All respondents who sell salted fish do not know what food additives are and the rules for using food additives in food products. The seller never adds any ingredients to the salted fish sold.

Salted fish products that are not sold, sellers use salted fish as duck feed; some sellers handle salted fish products that are not sold by turning them into duck feed, putting them in the freezer, and 67% of respondents do not know how to handle salted fish that are not sold.

Respondent sellers know that using formalin is unsafe for health, but sellers do not know the characteristics of salted fish containing formaldehyde. Seller respondents do not know cases of formalin abuse in food products in the community. Actions to be taken if the Seller finds the product contains other forms; they will not sell and return the fish to the distributor.

There are also very few outreach activities related to food safety among salted fish traders. 67% of traders have never received education/socialization about food safety, and 50% of sellers have never received testing on the products they sell.

3.2. Formulation of strategic assumptions

Experts consider the results of the identification of salted fish sellers in determining strategic assumptions that can be made to minimize formalin abuse in salted fish sellers. Each expert issued an opinion regarding the strategic assumptions that can be made to minimize formalin abuse in the current condition of salted fish traders in Subang Regency.

Eight assumptions were obtained from each expert in responding to the condition of salted fish sellers. Experts then weight these assumptions based on the level of importance and certainty of the assumptions. The weighting of assumptions is in Table 2.

Table 2. Strategic Assumptions for Prevention of Formalin Abuse

Code	Assumptions	Importance	Certainty
A1	Dissemination to sellers and buyers regarding formalin, the dangers of formalin and how to use it	7	7
A2	Routine supervision by the agency in charge of food safety and salted fish standards	7	6
A3	Manufacture portable detection kits/tools that are easy to use and have accurate results	7	7
A4	Routine checks and punishment for those who violate	7	6
A5	Coaching for salted fish sellers	6	6
A6	Salted fish periodical testing	6	5
A7	Training on salted fish preservation and processing of salted fish that are not sold	6	6
A8	Food safety education	6	7

The results of the weighting in table 2 are graphically depicted in the diagram to determine the position of each assumption based on the level of importance and certainty as in Figure 3.

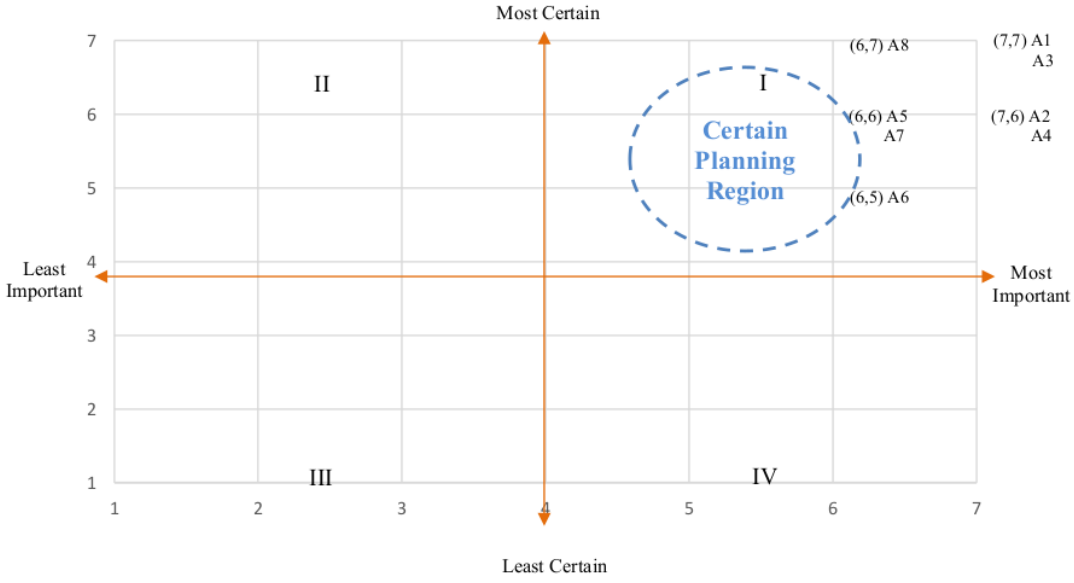


Figure 3. Ranking of strategic assumptions

In Figure 3, all assumptions are in diagram I, which means they have a high level of importance and confidence. Strategic assumptions that have a "very high" importance value and "very certain" certainty, namely socialization to sellers and buyers regarding formalin, the dangers, and how to use it as well as the manufacture of portable detection kits/tools that are easy to use and accurate results are the best according to experts as a strategy to minimize formalin abuse in salted fish traders.

4. Conclusion

Salted fish is a product with a process of salting and drying to anticipate damage to fishery products. The knowledge of donated salted fish sellers about formalin is still minimal. To prevent the misuse of formalin, according to experts, eight assumptions were obtained, including dissemination to sellers and buyers regarding formalin, the dangers of formalin and how to use it; routine supervision by the agency in charge of food safety and salted fish standards; manufacture portable detection kits/tools that are easy to use and have accurate results, routine checks and punishment for those who violate, coaching for salted fish sellers, salted fish periodical testing, training on salted fish preservation and processing of salted fish that are not sold, food safety education. There are two assumptions with the highest level of importance and certainty as the chosen strategy to prevent formalin abuse in salted fish sellers, namely socialization to sellers and buyers regarding formalin, the dangers, and how to use it as well as the manufacture of portable detection kits/tools that are easy to use and accurate results

References

[1] Meiyasa F and Nurjanah 2021 *Fishery product microbiology* (Aceh: Syiah Kuala University Press) p 35–62
[2] Purna W, Masengi S, Sipahutar YH, Perceka ML, Yuniarti T, and Bertiantoro A 2021 *Prosiding Simposium Nasional VIII Kelautan dan Perikanan* (Makassar: Universitas Hasanuddin) p 111–20
[3] Niswah C, Pane ER, and Resanti M 2016 *J Bioilmi* **2**(2) p 121–8
[4] Tarumingi TTS, Umboh JML, and Maddusa SS 2021 *J Kesmas* **10**(4) p 1–6
[5] Noorrela L and Munggaran IP 2021 *J Food Sci Technol.* **1**(1) p 49–57
[6] Mawar 2017 *J Media Anal Kesehat.* **8**(2) p 67–71
[7] Lestari I, Sangra Pratiwi G, and Yuliawati 2022 *J Ilm Manuntung* **8**(1) p 47–54
[8] Anugrah R, Salbiah, and Hermilestari A 2022 *J Environ Heal Sanit Technol.* **1**(1) p 47–51
[9] Hasanah SUF, Kurniawan MF, and Aminah S 2021 *J Gipas*. **5**(2) p 18–34.
[10] Rahayu WE 2020 *J Ilm Ilmu dan Teknol Rekayasa*.**3**(1) p 1–8
[11] Widayanti NP and Laksmita AS 2017 *J Ilm Medicam*. **3**(1) p 44–7
[12] Budi Sundoro R, Sulistyadi K, and Abdulla S 2019 *Int J Trop Dis Heal* **39**(4) p 1–8.
[13] Indriati A, Maarif MS, and Hermawan A 2015 *Strategy to Improve the Quality of Human Resources to Grow Small and Medium Enterprises Performance* (Bogor: IPB University)
[14] Eriyatno and Fadjar S 2007 *Policy Research Research Methods for Postgraduates* (Bogor: IPB Press)
[15] Marimin 2004 *Multiple criteria decision making techniques and applications* (Jakarta: PT Gramedia Widiasarana Indonesia)

Indriati_2023_IOP_Conf._Ser.__Earth_Environ._Sci._1168_012...

ORIGINALITY REPORT

18%	16%	12%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	repository.unair.ac.id Internet Source	5%
2	jurnal.ut.ac.id Internet Source	2%
3	Submitted to Universitas Diponegoro Student Paper	2%
4	Submitted to Universitas Katolik Indonesia Atma Jaya Student Paper	2%
5	garuda.kemdikbud.go.id Internet Source	2%
6	F Ariyani, I Hermana, I Hidayah. "The use of preservatives consist of green tea, piper betel and potassium sorbate on boiled salted fish processing", IOP Conference Series: Earth and Environmental Science, 2018 Publication	1%
7	talenta.usu.ac.id Internet Source	1%

8	Ria Budi Sundoro, Kohar Sulistyadi, Syahfirin Abdulla. "Strategic of Implementation of Ergonomic Positions for Nurses in Healthcare Department with SAST and AHP Methods in Qatar", International Journal of TROPICAL DISEASE & Health, 2019 Publication	1 %
9	Submitted to Mariano Marcos State University - Main Campus Student Paper	1 %
10	A Kusmarwati, D A Novianti, Y Yennie. "Prevalence of Aflatoxigenic Aspergillus sp. in Dried Salted Fish from Traditional Market in Bandung City, Indonesia", IOP Conference Series: Earth and Environmental Science, 2021 Publication	<1 %
11	D Kurnia, Marimin, U Haris, Sudradjat. "Critical issue mapping of Indonesian natural rubber industry based on innovation system perspectives", IOP Conference Series: Earth and Environmental Science, 2020 Publication	<1 %
12	docplayer.net Internet Source	<1 %
13	pt.scribd.com Internet Source	<1 %
	journal.sgu.ac.id	

14	Internet Source	<1%
15	Y M Lubis, Zaidiyah, Yusriana, S S Dinti. "Chemical and microbiology assessment of salted fish (anchovy and catfish) product in Banda Aceh District as a parameter of food safety", IOP Conference Series: Earth and Environmental Science, 2021 Publication	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		