

## Bridging science and halal: creating a communication plan and materials for halal-compliant food products of the Department of Science and Technology-Industrial Technology Development Institute

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### Abstract

Halal science involves the systematic acquisition of knowledge through observation, experimentation, and practice to describe and explain natural phenomena involving halal practices. However, communicating this knowledge to the public through traditional scientific manuscripts can sometimes lead to confusion and misinterpretation, particularly among non-experts. To address this, a contextual model of disseminating information was employed to effectively convey the true meaning of halal to stakeholders involved in handling and manufacturing halal food. In this study, a science communication plan was prepared to raise awareness among food manufacturing industries in the Philippines (where almost 90% of the population are non-Muslims) on halal and cultural sensitivity and to encourage them to become halal-compliant. Various science communication materials, including rundown sheets for broadcast media, opinion pieces, editorial calendars, brochures, infographics, and elevator pitches, were developed specifically for halal-compliant food products developed by the Department of Science and Technology - Industrial Technology Development Institute (DOST-ITDI). These materials facilitated stakeholders' understanding of the importance of halal compliance and provided a comprehensive view of the Halal Assurance System. Overall, the initiatives taken in this study enhanced the amount of information that can be communicated to stakeholders, resulting in a better understanding of halal compliance and its importance in food manufacturing.

## 1. Introduction

Halal food refers to all permitted food associated with Muslims and others who follow the dietary Islamic laws (Haque *et al.*, 2018). There is an increasing demand for halal food products in the world (Güneş and Yetim, 2020) and in the Philippines (Acas and Loanzon, 2020). According to statistics, the global halal market value is worth over 2 trillion US dollars (Statista, 2023). It is expected to continuously grow and eventually become the main market force in the future due to the increasing population of Muslims worldwide as well as the increasing acceptance and interest of the non-Muslim community brought by ethical, health, and safety features of halal food products (Azam and Abdullah, 2020).

The Department of Science and Technology (DOST) in the Philippines has a range of programs supporting the Muslim community, particularly in the

development of halal food products. One of the research and development institutions under the DOST Philippines is the Industrial Technology Development Institute (DOST-ITDI). The said agency is one with supporting and assisting the industry in attaining a more sustainable and inclusive food system through halal food. One of the projects implemented by the said institution is the *Development of Halal-compliant Dehydrated Food Products from Selected Food Materials (Fruits, Vegetables, and Root Crops)*. Food materials like those coming from fruits (mango, coconut and pineapple), vegetables (carrots and *malunggay*), and root crops (cassava, sweet potato, and purple yam or *ube*) are considered halal (Alzeer *et al.*, 2018); however, once these materials are processed, in order to be considered halal, the ingredients, processing methods, packaging materials, and equipment used must be halal certified and/or halal-compliant (Made and Prima, 2022).

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The Philippines is considered a Muslim minority country (Ilahan-Bakil, 2021). Due to this circumstance, the majority of industry collaborators at the DOST-ITDI are non-Muslim small and medium-scale manufacturers who primarily serve the non-Halal market. Consequently, there is a limited awareness of halal guidelines. Despite that, a lot of companies are interested to ventures in halal products because of the growing demand for the halal food industry in the world (Nurrachmi, 2017). However, communicating halal science to the broader public and non-Muslim stakeholders through conventional scientific manuscripts can sometimes lead to confusion and misinterpretation, especially among those without expertise in the subject.

For manufacturers to understand the importance of halal and to develop a mindset for ensuring halalness, it is important to communicate the Halal Assurance System in an empathic sense - that is, developing a culture of halal in the food chain as if the industry players were halal-practicing individuals themselves. This is precisely where science communication comes into play. Science communication encompasses a range of practices aimed at conveying scientific ideas, methods, knowledge, and research to non-expert audiences in an accessible, comprehensible, and practical manner.

Hence, this study aimed to develop a science communication plan and materials for the halal-compliant food products developed by DOST-ITDI, particularly dehydrated fruits, vegetables, and root crops. These communication plans and materials seek to provide halal awareness to non-Muslims and a comprehensive view of the Halal Assurance System in every step of the production of dehydrated products.

## 2. Materials and methods

The development of a science communication plan and materials for the DOST-ITDI's halal-compliant dehydrated food products were conducted during the Science Communication Fellowship Program jointly organized by the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) and the University of the Philippines Los Baños in 2022. The science communication activities were designed based on the lessons learned during the said fellowship.

The science communication activity of this study started by preparing a science communication plan. Objectives, intended stakeholders, communication materials, and communication activities were identified in the communication plan. The goal of the activity was established based on the knowledge gaps of the target audience (Boroweic, 2023). A contextual model was

used for disseminating information considering the levels of knowledge, awareness, needs, and attitudes of key players in the halal dehydrated food value chain. This approach allowed for the adjustment of communication materials to make them more comprehensible and engaging for the target audience (Lewenstein, 2003). Based on the prepared science communication plan, several communication materials were prepared for the intended stakeholders such as infographics, brochures, the Halal Assurance Management System (HAS) Manual, short videos, training materials, and more. The effectiveness of the communicated information was assessed through evaluations by key players.

## 3. Results and discussion

The science communication plan designed for DOST-ITDI's halal-compliant dehydrated foods is shown in Table 1. It has been given the title 'Step by Step Towards Halal Science: The Halal Way of Food Dehydration,' with the main objective of communicating the halal concepts to stakeholders who will be involved in handling and manufacturing halal dehydrated food, especially non-Muslims.

On 29 June 2021, the project team responsible for developing DOST-ITDI's halal-compliant dehydrated foods conducted an online seminar on Halal Awareness. The seminar attracted 989 participants from various regions in the Philippines, primarily representing private companies, government entities, students, and academia. During the webinar, participants were asked to suggest topics for in-depth discussions. The results of the seminar evaluation revealed that attendees still had knowledge gaps regarding Halal certification guidelines, the requirements for dehydrated foods to achieve halal compliance, and the Halal Assurance Management System (HAS).

Following the development of the science communication plan, informational materials such as infographics and videos were created. Infographic materials, as shown in Figure 1, and short videos were posted on media platforms like Facebook Page and YouTube to further raise awareness of halal practices and cultural sensitivity. According to Basco (2020) and Yarbrough (2019), infographics are effective tools in data representation and visual communication because they follow multisensory and multimodal techniques. Several types of infographics were used in this study as shown in Figure 1. The first infographic used was a comparison infographic material (Figure 1a) which compares the halal certification requirements for different levels of enterprises. The second infographic (Figure 1b) is an example of a list of infographic material as it provides the list of the basic contents of the HAS

Table 1. Science communication plan.

Project Title: Step by Step Towards Halal Science: The Halal Way of Food Dehydration	Main objective: To communicate halal concepts to stakeholders that will be involved in handling and manufacturing halal dehydrated food (especially Non-Muslim).		
Science communication objectives	Intended stakeholders	Communication materials	Communication activities
To raise awareness of halal and cultural sensitivity	Main: Food SMEs Farmers, Traders, Toll Packers, Consumers	Information materials	Informal written and visual communications (e.g., infographics, short videos) posted on online media platforms
To inform and convince food manufacturers to be halal-compliant	SMEs from the Food Dehydration Sector	Brochures	Knowledge sharing activity
To guide project collaborators on halal compliance of process, product, and facility and introduce the Halal Assurance Manual	Interested collaborators from the Food Dehydration Sector	HAS Manual Audit guidelines infographics	<ul style="list-style-type: none"> <li>Focus group discussions</li> <li>Site Visit</li> </ul>
To provide technical assistance in making a customized Halal Assurance Manual in preparation for certification	Interested collaborators from the Food Dehydration Sector	Information materials HAS Manual	Customized training

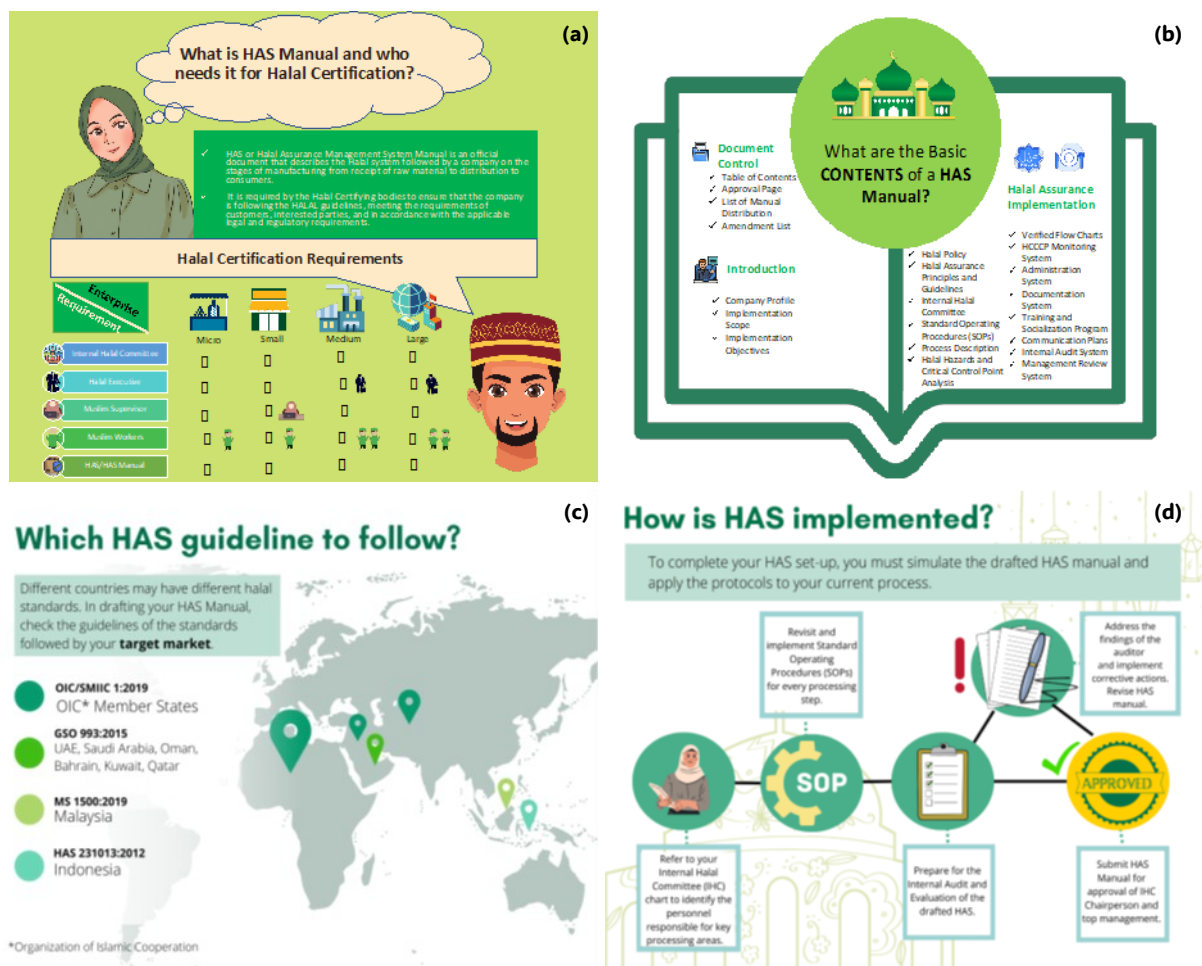


Figure 1. (a) Comparison (b) List (c) Geographic (d) Road map infographics.

Manual. According to Parveen and Husain (2021), this type of infographic is effective in attracting the readers and audience's attention and increasing engagement as it allows the users to organize data into lists, making them more convincing than complex ideas. The third type of infographic material in the study is a geographic infographic. It uses maps to easily locate the target market in a specific geographic location that may have different HAS guidelines. Lastly, the road map

infographics were also used to show how HAS is being implemented.

A brochure (Figure 2) informing and convincing the Food Manufacturers, particularly those involved in food dehydration, on how to become Halal-compliant through the help of DOST-ITDI was made available in printed copy and the web-based version posted in social media. The target audience of this technical material is



Figure 2. Brochure about “The Ultimate Checklist to become Halal-compliant through DOST-ITDI”.

employers, entrepreneurs, managers, and/or technical staff from food industries aged from 22 to 39 years old. The brochure was chosen as the communication channel for the intended audience because it is versatile (Mendoza *et al.*, 2019) as it can be distributed at trade shows, can be put inside the visitor’s lounge area of the Food Processing Division of DOST-ITDI, can be sent to the target audience via direct mail or e-mail, and can be published in DOST website and social media.

To guide project collaborators on halal compliance of processes, products, and facilities and to introduce them to the preparation of the Halal Assurance Manual, the project team for halal dehydrated food products conducted an online seminar titled "How to HAS? Application of Halal Assurance Management System in Food Industries." It covers several topics such as: (a) Requirements of Halal Certifying Body, (b) Requirements of Halal Auditor, (c) Principles of HAS, and (d) Implementation of HAS. The seminar took place on 29 June 2022 and was attended by 393 participants from all over the Philippines. A total of 70% of the attendees were employers or employees from private companies aged between 22 and 39 years old. Most of these participants were non-Muslims from the National Capital Region (NCR) and Region 4A. The results of the training evaluation showed that a significant number of attendees rated the appropriateness of the training methodology used as outstanding.

A site visit was also conducted by the project team and collaborators from the Food Dehydration Sector to a halal-certified restaurant in Mindanao and a halal facility in Metro Manila. This visit provided them with an actual experience and immersion in a facility that is halal-certified. Additionally, the halal R&D facility at DOST-ITDI (Figure 3) was made available for a site visit to provide interested collaborators with a walkthrough and an opportunity to gain firsthand experience.

Lastly, a HAS Manual Writing Workshop was organized for the Certified Halal Lead Auditors from the



Figure 3. Halal research and development facility of DOST-ITDI.

DOST system. This workshop aims to provide technical assistance in creating customized Halal Assurance Manuals, making it easier to prepare for Halal certification for interested food companies. It was attended by 68 Certified Halal Lead Auditors and feedback from the attendees of the workshop indicated that the objective of the said activity was met very satisfactorily.

#### 4. Conclusion

In conclusion, science communication proves that scientific ideas and results of research can be properly and effectively communicated to the target audience, provided that appropriate media, messages, and activities were properly planned and executed. The contextual model is the appropriate approach to use for Halal science, as it involves concepts and philosophy aside from the technical, scientific, or empirical aspects. Other communication materials that were not presented in the paper was showcased during the oral presentation. It is recommended to make use of these additional communication materials as well.

#### Conflict of interest

The authors declare no conflict of interest.

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